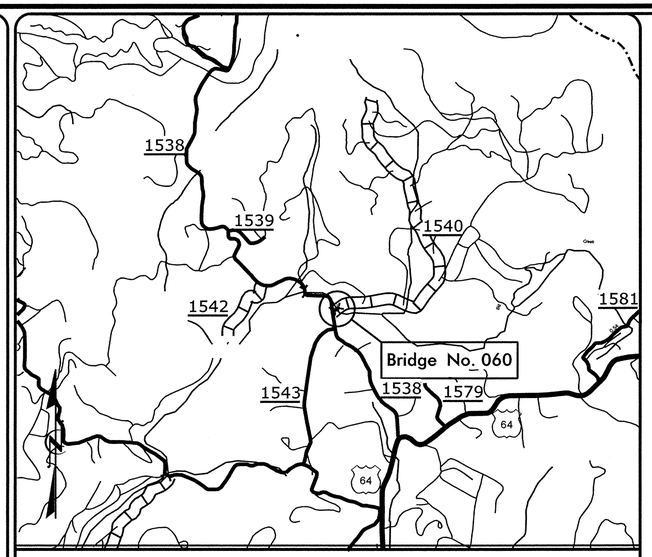
09/08/99

TIP PROJECT: 17BP.14.R.56

CONTRACT: DN00181



VICINITY MAP

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.56	1	

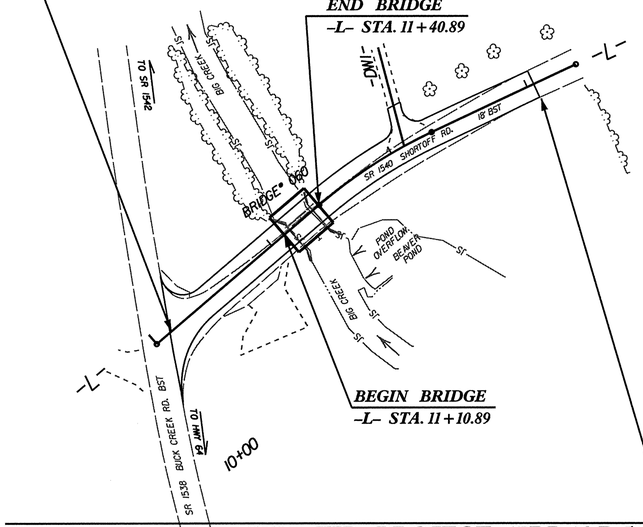
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.56		PE, R/W, UTIL
17BP.14.R.56		CONST

LOCATION: BRIDGE 060 OVER BIG CREEK ON SR 1540 (SHORTOFF ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

NAD 83/
NSRS 2007

STA. 10+11.55 –L– BEGIN TIP PROJECT 17BP.14.R.56



STA. 13+04.73 –L– END TIP PROJECT 17BP.14.R.56

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = 910

V = 25 MPH

FUNC CLASS =
LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.14.R.56 = 0.050 MI

LENGTH STRUCTURE TIP PROJECT 17BP.14.R.56 = 0.006 MI

TOTAL LENGTH TIP PROJECT 17BP.14.R.56 = 0.056 MI

NCDOT CONTACT: JOSHUA DEYTON, P.E.
PROJECT ENGINEER

Prepared In the Office of:
Mattern & Craig
CONSULTING ENGINEERS • SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 • FAX (828) 254-4562

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 22, 2013

LETTING DATE: FEBRUARY 25, 2014

JAMES B. VOSO, P.E.
PROJECT ENGINEER

DANA J. BOLDEN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029945 ENGINEER DANA J. BOLDEN P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022393 ENGINEER JAMES B. VOSO P.E.

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

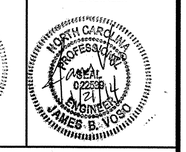
12:37:27 PM
R:\3215\Bridge060\Roadway\Proj\17BP14R56_RDY_TSH.dgn
bgross

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.56	1–A

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER



INDEX OF SHEETS – GENERAL NOTES – LIST OF STANDARDS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	Title Sheet
1–A	Index of Sheets, General Notes, and List of Standards
1–B	Conventional Symbols
1–C	Survey Control Sheet
2	Typical Sections, Pavement Schedule, and Wedging Detail
2–A	Typical Sections, Pavement Schedule, and Wedging Detail
3	Summary of Quantities
3–A	Summary of Drainage Quantities, Summary of Guardrail, and Earthwork Summary
4	Plan Sheet
5	Profile Sheet
TMP–1 THRU TMP–3	Transportation Management Plans
PMP–01	Pavement Marking Plan
EC–1 THRU RF–2	Erosion Control Plans
X–1A	Cross–Section Summary Sheet
X–1	Cross–Sections
TS–01	Structure Plans Title Sheet
S–01 THRU S–7	Structure Plans
SN	Structure Plans – Standard Notes Sheet

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – N. C. Department of Transportation – Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 – EARTHWORK	
200.02	Method of Clearing – Method II
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 6 – ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 – INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01–17–12
REVISED: 07/30/12

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE–IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:

SUBSURFACE PLANS ARE AVAILABLE FOR THE STRUCTURE ONLY. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE OTHER SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS–SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY AND FRONTIER COMMUNICATION
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT–OF–WAY MARKERS:

ALL RIGHT–OF–WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT IN ACCORDANCE WITH SECTION 801 OF THE 2012 NORTH CAROLINA STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4,R.56	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing High Quality Wetland Boundary — HQ WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- River Basin Buffer — RBB
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Guage — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equaility Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

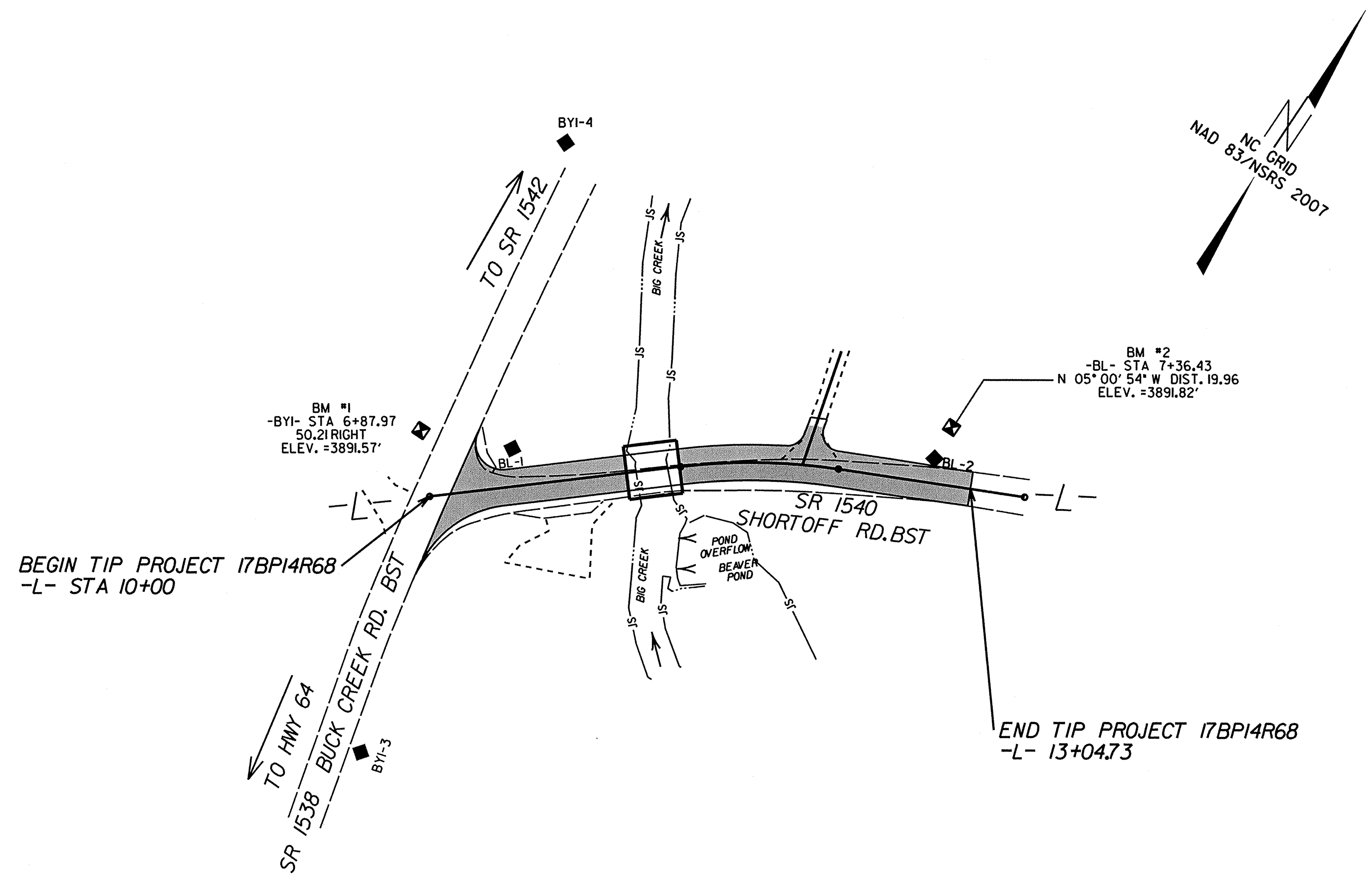
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — PUTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.56	1-C

SURVEY CONTROL SHEET 17BP.14.R.56



BL

POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
1	BL-1	514371.7990	745748.9820	3885.45	10·49.72	25.82 LT
2	BL-2	514498.3430	745948.7020	3886.67	12·83.17	14.39 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	EY1 STATION	OFFSET
4	BY1-4	514531.2988	745678.6026	3887.15	OUTSIDE PROJECT LIMITS	
11	BL-1	514371.7990	745748.9820	3885.45	11·54.70	30.86 LT
3	BY1-3	514182.7059	745773.1975	3897.30	13·46.90	16.54 LT

BM1 ELEVATION · 3891.57
N 514352 E 745701
BY1 STATION 6·87.97 50.21 RIGHT
8" SPIKE SET IN THE ROOT OF A 8" WHITE OAK TREE

BM2 ELEVATION · 3891.82
N 514518 E 745947
BL STATION 7·36.43
N 05°00'54" W DIST 19.96
8" SPIKE SET IN THE ROOT OF A 16" WILD CHERRY TREE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "550060 BL-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 514371.7990 (ft) EASTING: 745748.9820 (ft)
ELEVATION: 3885.45 (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9996952185
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "550060 BL-1" TO -L- STATION 10+00 IS
S26°3'27"E 53.4459'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Scale 1" = 50'
50' 0 50' 100'

STRUCTURE: 55-0060
COUNTY: MACON

6/2/99
1:13:42 PM
\\192.168.13.10\projects\3215\Bridge060\Roadway\Proj\17BP14R56_LS_PSH.dgn
baross

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.56	2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022599 JAMES B. VOSO

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022599 JAMES B. VOSO

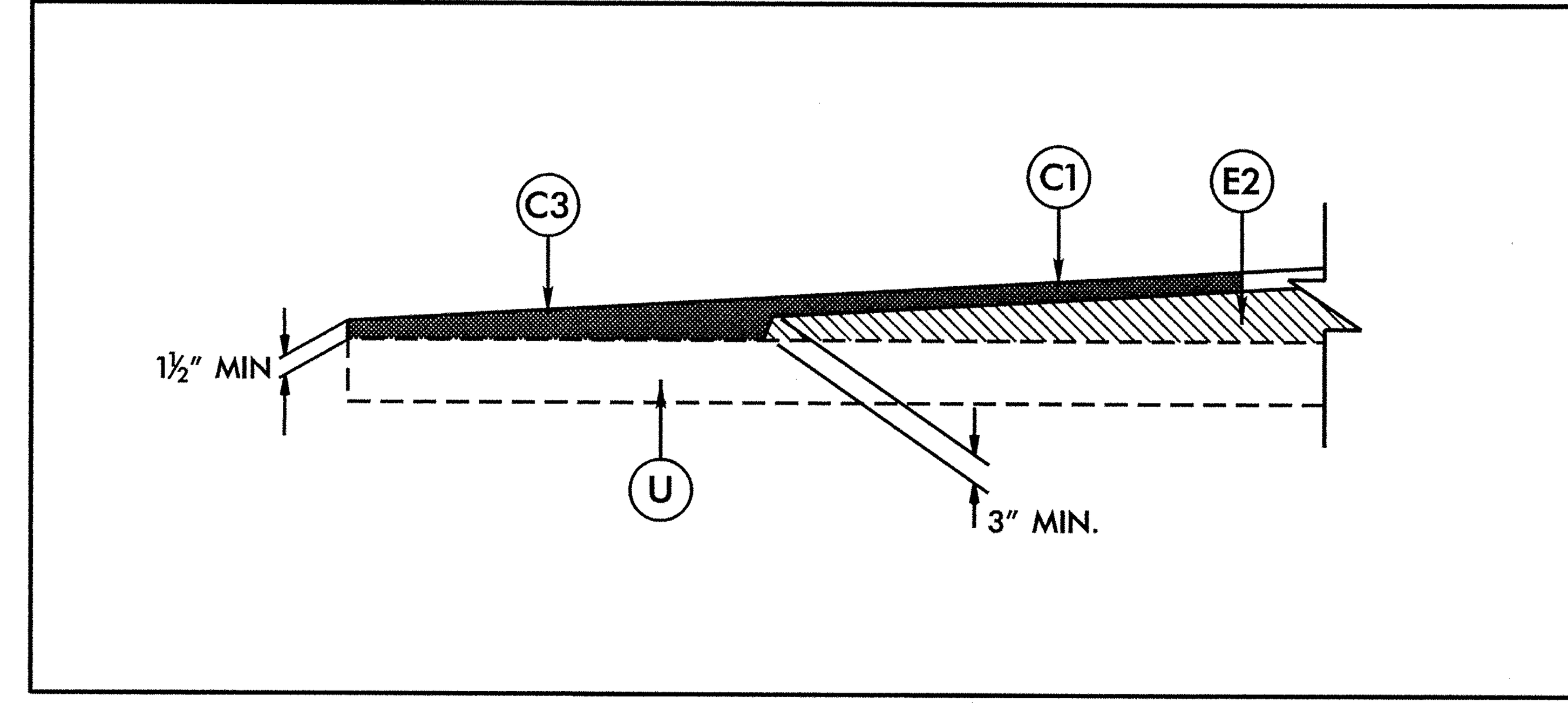
PLANS PREPARED BY:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

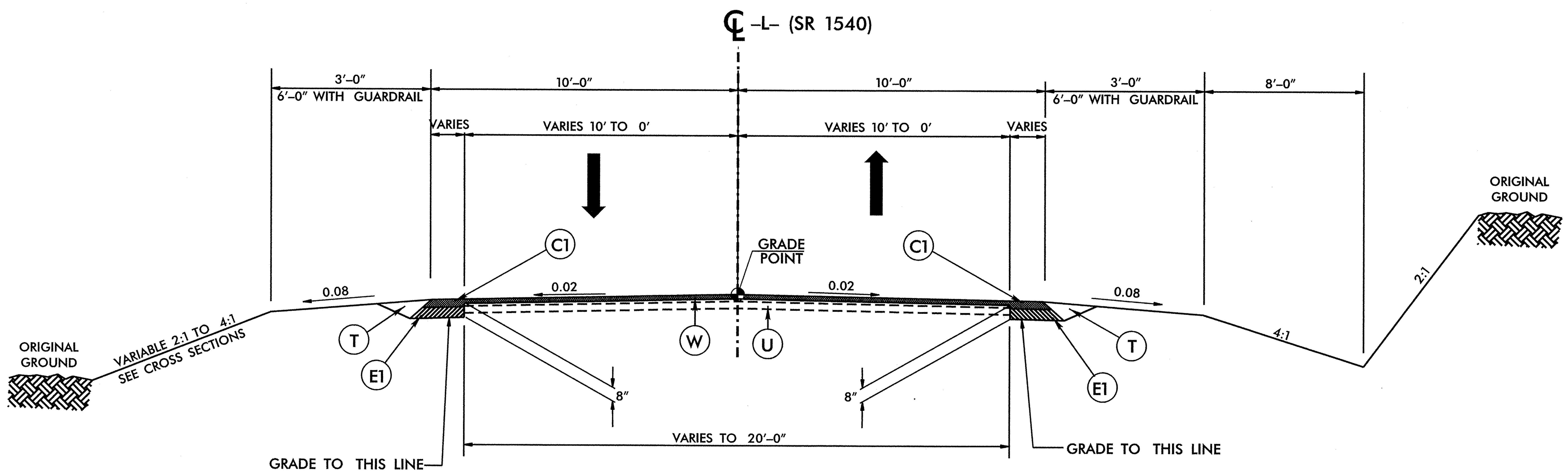
PAVEMENT SCHEDULE

ITEM	DESCRIPTION	ITEM	DESCRIPTION
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	PROP. APPROX. 3¾" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 210 LBS. PER SQ. YD. IN EACH OF 2 LAYERS.	T	EARTH MATERIAL.
C3	PROP. VARIABLE DEPTH S9.5B ASPHALT CONCRETE SURFACE COURSE, AT AN AVERAGE RATE OF 112 LBS PER SY. YD. AT 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	W	WEDGING (SEE DETAIL 1 THIS SHEET).

NOTE: ALL PAVEMENT EDGE SLOPES ARE TO BE 1:1

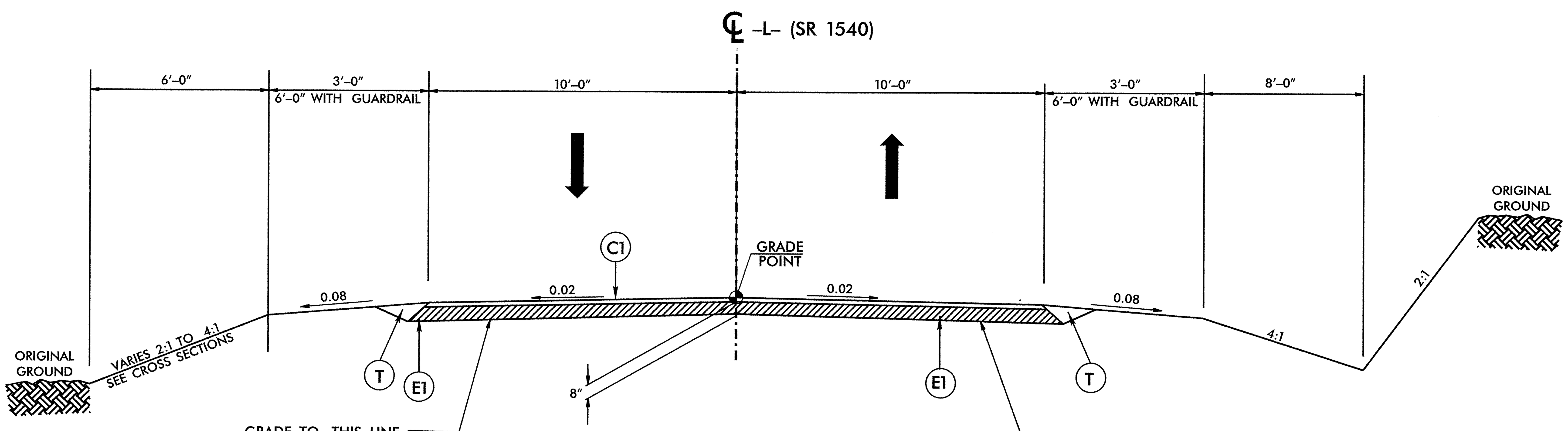
Detail 1 Showing Method of Wedging





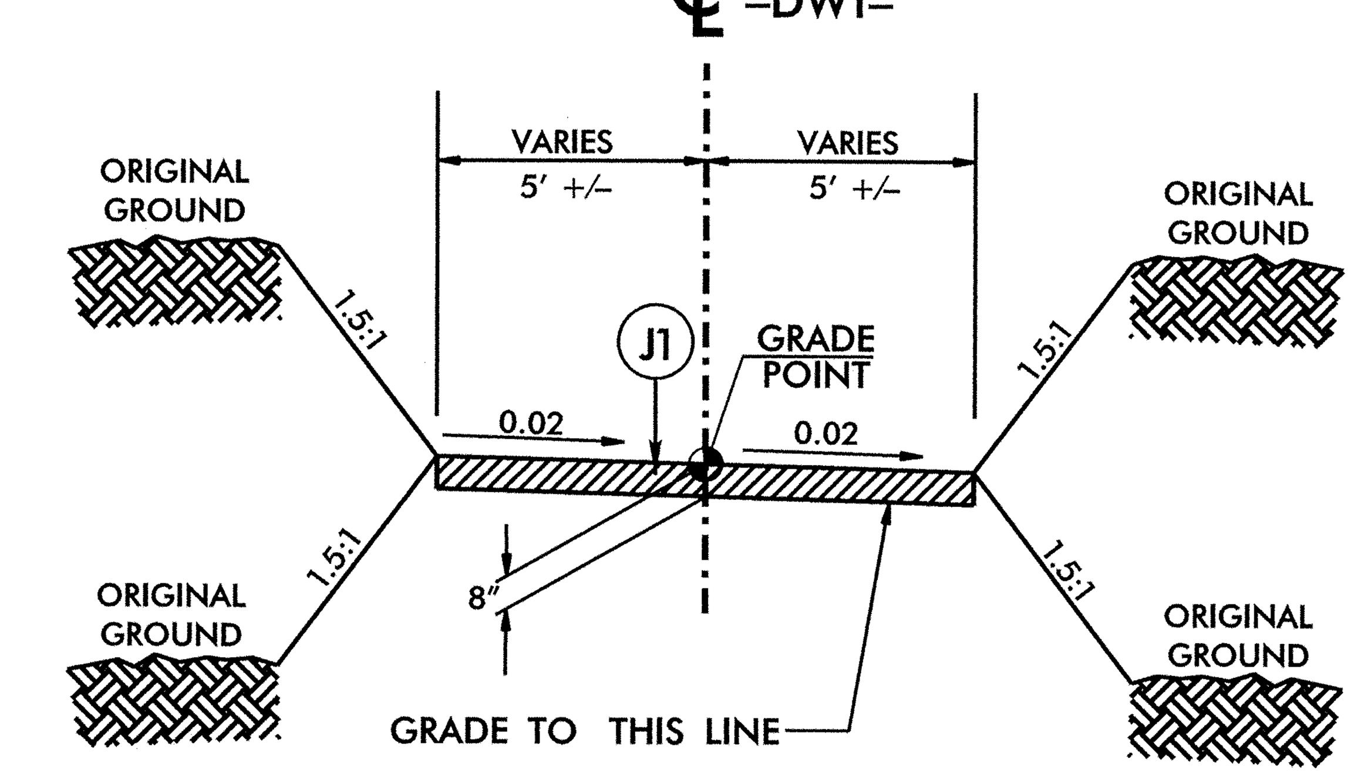
TYPICAL SECTION NO. 1

USE TYPICAL SECTION No. 1
-L- STA. 10+11.55 TO STA. 11+10.89 (Begin Bridge)



TYPICAL SECTION NO. 2

USE TYPICAL SECTION No. 2
-L- STA. 11+40.89 (End Bridge) TO STA. 13+04.73



TYPICAL DRIVEWAY SECTION
-DW1- STA. 10+10.00 TO STA. 10+25.00

1:09:21 PM
\\192.168.13.10\projects\3215\Bridge060\Roadway\Proj\17BP14R56_RDY_TYP.dgn
barass

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.56	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

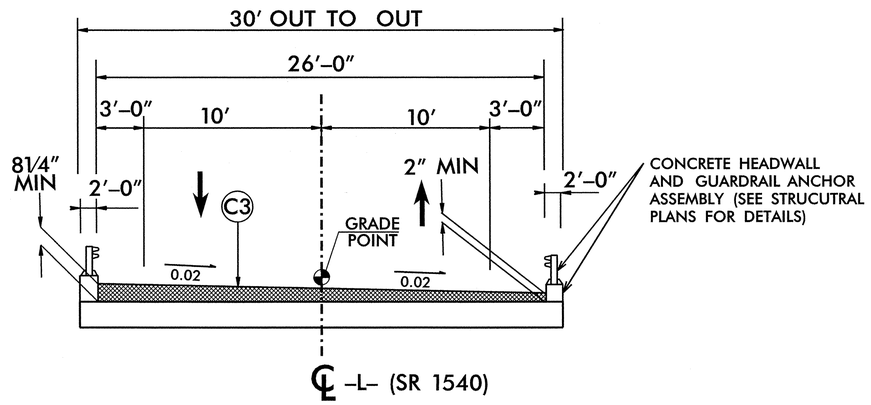
NORTH CAROLINA PROFESSIONAL SEAL 022598 ENGINEER JAMES B. VOSO

PAVEMENT SCHEDULE

ITEM	DESCRIPTION	ITEM	DESCRIPTION
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	PROP. APPROX. 3¾" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 210 LBS. PER SQ. YD. IN EACH OF 2 LAYERS.	T	EARTH MATERIAL.
C3	PROP. VARIABLE DEPTH S9.5B ASPHALT CONCRETE SURFACE COURSE, AT AN AVERAGE RATE OF 112 LBS PER SY. YD. AT 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	W	WEDGING (SEE DETAIL 1 THIS SHEET).

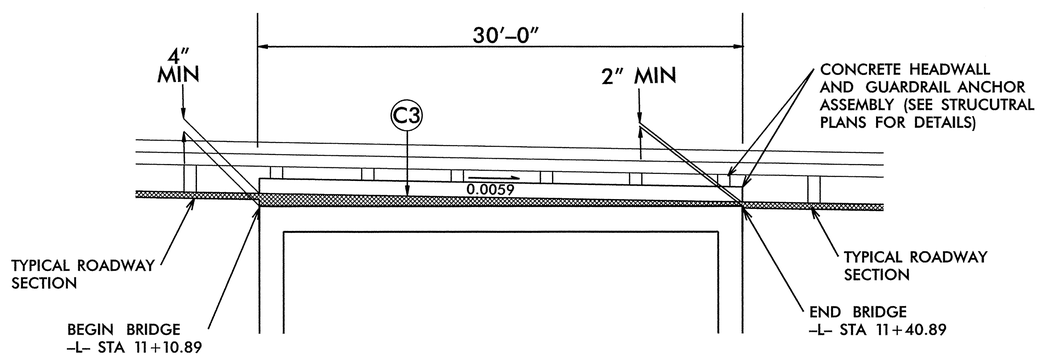
NOTE: ALL PAVEMENT EDGE SLOPES ARE TO BE 1:1

CROWNSPAN OR EQUIVALENT
BOTTOMLESS CULVERT

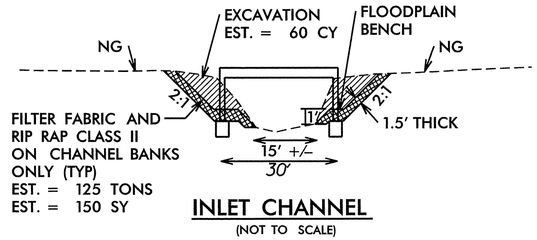


TYPICAL SECTION ON BRIDGE

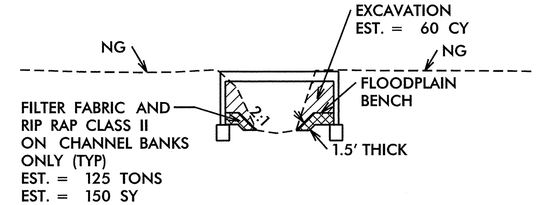
–L– STA. 11+10.89 (BEGIN BRIDGE) TO 11+40.89 (END BRIDGE)



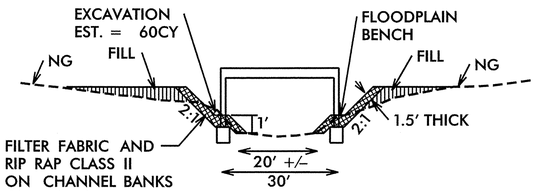
TYPICAL SECTION ALONG –L– ℄



INLET CHANNEL
(NOT TO SCALE)



CULVERT INTERNAL CHANNEL
(NOT TO SCALE)



OUTLET CHANNEL
(NOT TO SCALE)

SUMMARY OF QUANTITIES

M	0000100000-N	800	MOBILIZATION	1	LS
M	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS
G	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	0.2	ACR
G	0043000000-N	226	GRADING	1	LS
			UNCLASSIFIED EXCAVATION	450.00	CY
			BORROW EXCAVATION	100.00	CY
			REMOVAL OF EXISTING ASPHALT PAVEMENT	350.00	SY
			FINE GRADING	400.00	SY
G	0057000000-E	226	UNDERCUT EXCAVATION	50.00	CY
G	0195000000-E	265	SELECT GRANULAR MATERIAL	50.00	CY
M	0199000000-E	SP	TEMPORARY SHORING	427.00	SF
D	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL,MINOR STRUCTURES	4.00	TON
D	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	15.00	SY
D	0343000000-E	310	15" SIDE DRAIN PIPE	30.00	LF
G	0995000000-E	340	PIPE REMOVAL	30.00	LF
P	1121000000-E	520	AGGREGATE BASE COURSE	130.00	TON
G	1220000000-E	545	INCIDENTAL STONE BASE	50.00	TON
P	1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	225.00	TON
P	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	125.00	TON
P	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	18.00	TON
GR	3030000000-E	862	STEEL BM GUARDRAIL	125.50	LF
GR	3045000000-E	862	STEEL BM GUARDRAIL, SHOP CURVED	37.50	LF
GR	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10.00	EA
GR	3165000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350 (TL-2)	3.00	EA
GR	3195000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE AT-1	1.00	EA
			Erosion Control		
D	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	30.00	SY
L	6000000000-E	1605	TEMPORARY SILT FENCE	790.00	LF
L	6009000000-E	1610	EROSION CONTROL STONE, CLASS B	175.00	TON
L	6012000000-E	1610	SEDIMENT CONTROL STONE	80.00	TON
L	6015000000-E	1615	TEMPORARY MULCHING	0.50	ACR
L	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	50.00	LB
L	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.25	TON
L	6024000000-E	1622	TEMPORARY SLOPE DRAINS	200.00	LF
L	6029000000-E	SP	SAFETY FENCE	100.00	LF
L	6030000000-E	1630	SILT EXCAVATION	200.00	CY
L	6036000000-E	1631	MATTING FOR EROSION CONTROL:	1900.00	SY
L	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	105.00	SY
L	6042000000-E	1632	1/4" HARDWARE CLOTH	170.00	LF
L	6045000000-E	SP	60" TEMPORARY PIPE	100.00	LF
L	6070000000-N	1639	SPECIAL STILLING BASINS	1.00	EA
L	6071020000-E	SP	POLYACRYLAMIDE (PAM)	20.00	LB
L	6084000000-E	1660	SEEDING AND MULCHING	0.50	ACR
L	6090000000-E	1661	SEED FOR REPAIR SEEDING	50.00	LB
L	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON
L	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	50.00	LB
L	6108000000-E	1665	FERTILIZER TOPDRESSING	0.25	TON
L	6111000000-E	SP	IMPERVIOUS DIKE	100.00	LF
L	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	5.00	EA
L	6123000000-E	SP	REFORESTATION	0.02	ACR
			Traffic Management		
Y	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	206.00	SF
Y	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	20.00	SF
Y	4430000000-N	1130	DRUMS	20.00	EA
Y	4445000000-E	1145	BARRICADES (TYPE III)	20.00	LF
Y	4455000000-N	1150	FLAGGER	1.00	DAY
Y	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	2.00	EA
Y	4470000000-N	1160	RESET TEMPORARY CRASH CUSHION	2.00	EA
Y	4485000000-E	1170	PORTABLE CONCRETE BARRIER	62.00	LF
Y	4500000000-E	1170	RESET PORTABLE CONCRETE BARRIER	42.00	LF
Y	3380000000-E	862	TEMPORARY STEEL BM GUARDRAIL	60.00	LF
			Pavement Marking		
PM	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	3260.00	LF
PM	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	60.00	LF
			Temporary Signal		
Z	7980000000-N	SP	Portable Traffic Signal System (Actuated)	2.00	EA
			Structures		
B	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION -EL-	1	LS
B	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION	1	LS
B	8182000000-E	420	CL A CONC (FOOTINGS)	31.60	CY
B	8217000000-E	425	REINFORCING STEEL (FOOTINGS)	804.00	LBS
B	8608000000-E	876	RIP RAP CLASS II	125.00	Tons
B	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	150.00	SY
B	8860000000-N	SP	30'x30' PRECAST CROWNSPAN OR EQUIVALENT	1.00	LS

COMPUTED BY: BGR DATE: 12-27-12
CHECKED BY: JBV DATE: 12-27-12

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.56	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	ANCHORS XI	ANCHORS GRAU 350 TYPE TL-2	ANCHORS M-350	ANCHORS TYPE III	ANCHORS CAT-1	ANCHORS VI MOD	ANCHORS BIC	ANCHORS AT-1	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L–	10+60.89	11+90.89	LT	130.00			BRIDGE	BRIDGE	3.00	6	31.25	31.25	3.63	3.63			2													
–L–	10+92.25	11+90.89	RT	80.00	33.00		BRIDGE	BRIDGE	3.00	6	31.25		3.63				1						1							
			TOTAL	210													3						1							
		DEDUCT ANCHORS	GRAU 350 TYPE TL-2 – 25.00	–75																										
			AT-1 – 6.25	–6.25																										
			TOTAL	118.75	33.00																									
ADDITIONAL GUARDRAIL POSTS = 10			SAY	125.00	37.50												3						1							

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32								CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
–L– 11+97.68	LT																																																																				30.0	REMOVE EXISTING 15" DRIVE PIPE
–L– 11+98.50	LT				3884.59	3884.25																															30.0																																			

ABBREVIATIONS

- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
- J.B. JUNCTION BOX
- M.H. MANHOLE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX

Note: Invert elevations are for bid purposes only. Contractor to field verify all existing and proposed elevations

SUMMARY OF EARTHWORK
IN CUBIC YARDS

PHASE I

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– 10+00 TO 10+50	0		8	8	0
–L– 10+50 TO 11+00	0		62	62	0
–L– 11+00 TO 11+50	5		110	105	0
–L– 11+50 TO 12+00	26		43	17	0
–L– 12+00 TO 12+50	47		4	0	43
–L– 12+50 TO 13+00	91		2	0	89
–L– 13+00 TO 13+04	5		0	0	5
TOTALS	174		229	192	137
EARTH WASTE TO REPLACE BORROW				–137	–137
GRAND TOTAL	174			55	
SAY	200			100	

PHASE II

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– 10+00 TO 10+50	0		27	27	0
–L– 10+50 TO 11+00	1		21	20	0
–L– 11+00 TO 11+50	3		83	80	0
–L– 11+50 TO 12+00	47		0	0	47
–L– 12+00 TO 12+50	81		0	0	81
–L– 12+50 TO 13+00	69		2	0	67
–L– 13+00 TO 13+04	4		0	0	4
TOTALS	205		133	127	199
EARTH BORROW TO REPLACE WASTE				–127	–127
GRAND TOTAL	205				72
SAY	250				100
ESTIMATED CONTINGENCY ITEMS:					
UNDERCUT EXCAVATION = 50					
SELECT GRANULAR MATIERIAL = 50					
INCIDENTAL STONE BASE = 50					

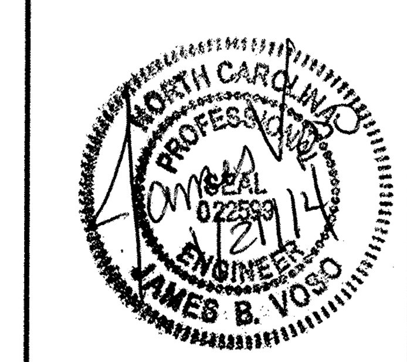
Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

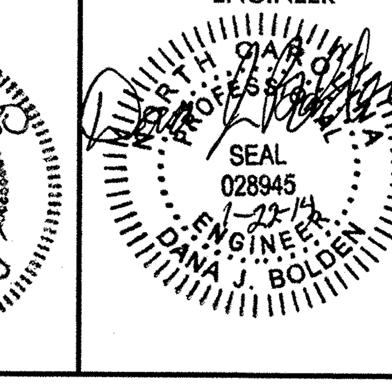
PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	11+40	13+05	CL	330
			TOTAL:	330
			SAY:	350

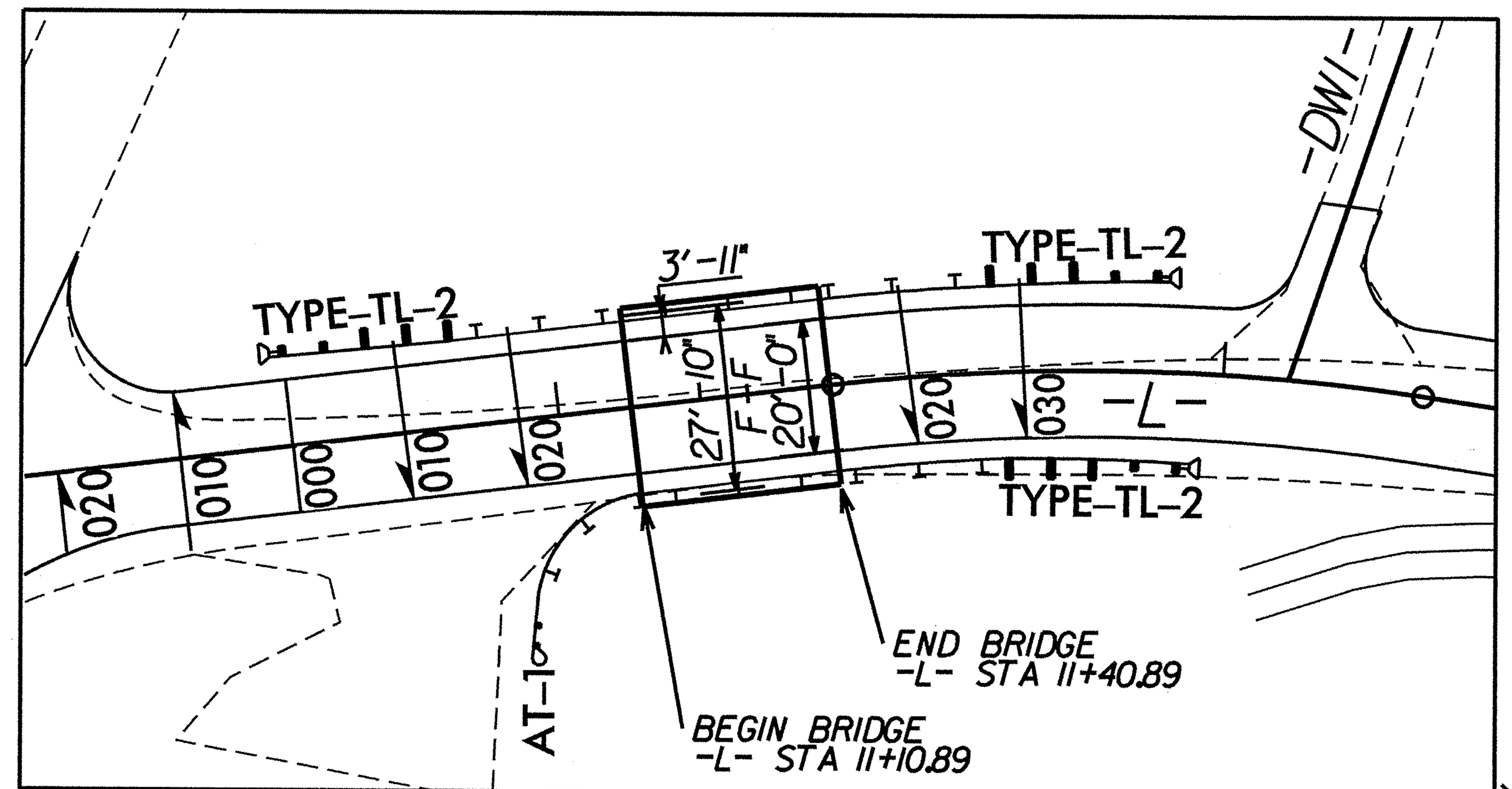
PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.56	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



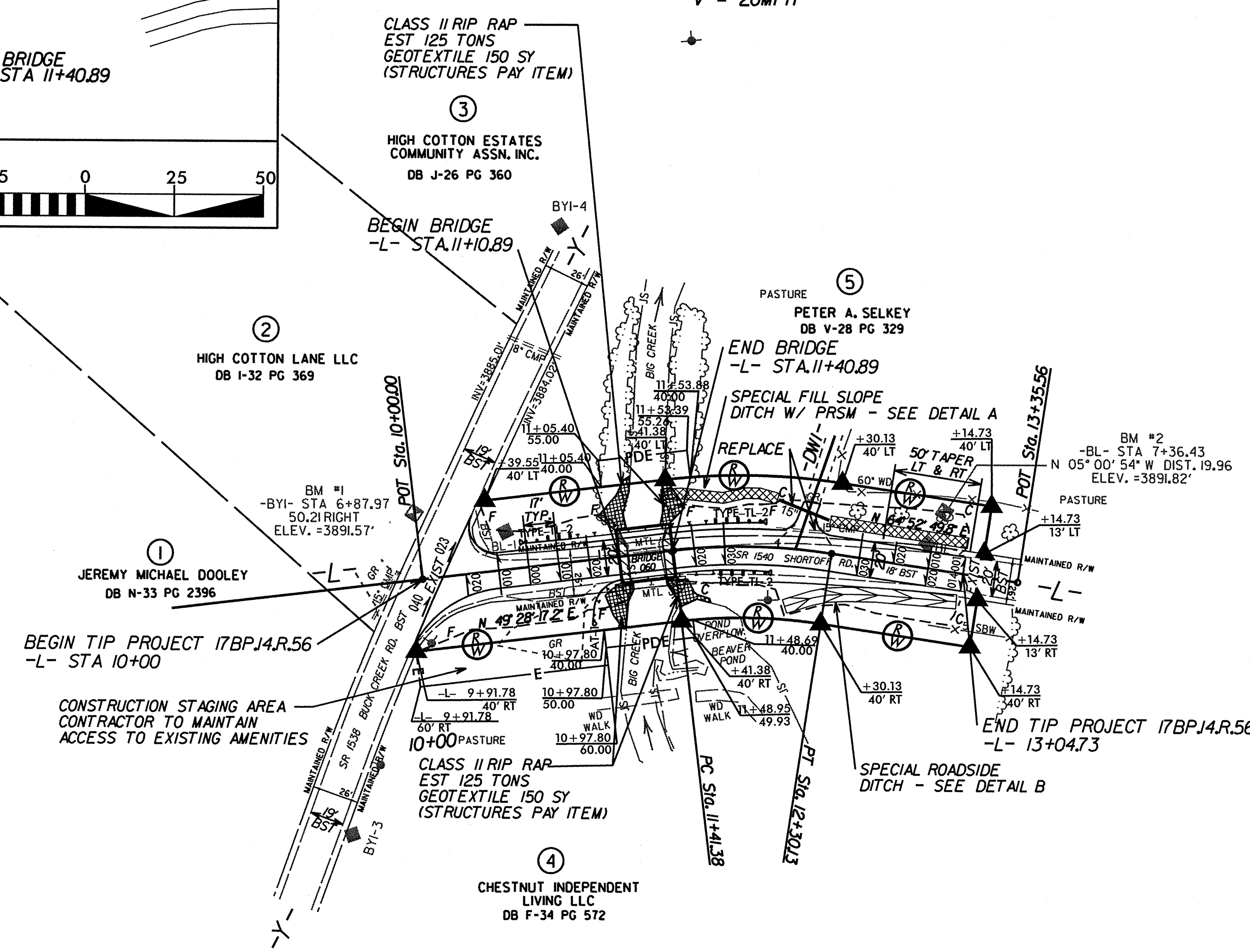


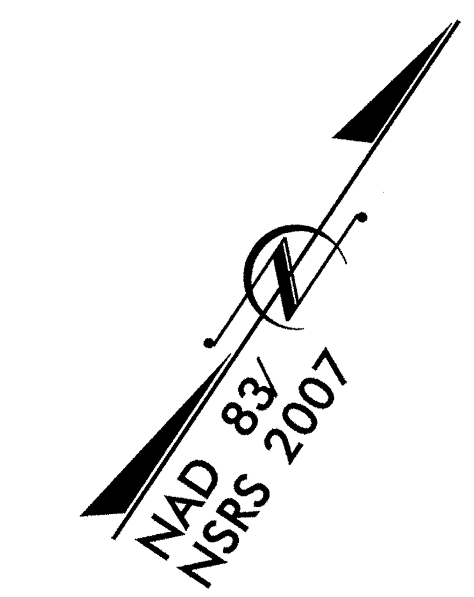
Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562



SKETCH SHOWING THE RELATIONSHIP OF THE BRIDGE TO THE PAVEMENT

-L-
PI Sta 11+86.03
Δ = 15° 24' 32.6" (RT)
D = 17° 21' 44.5"
L = 88.75'
T = 44.64'
R = 330.00'
SE = 0.03
V = 20MPH

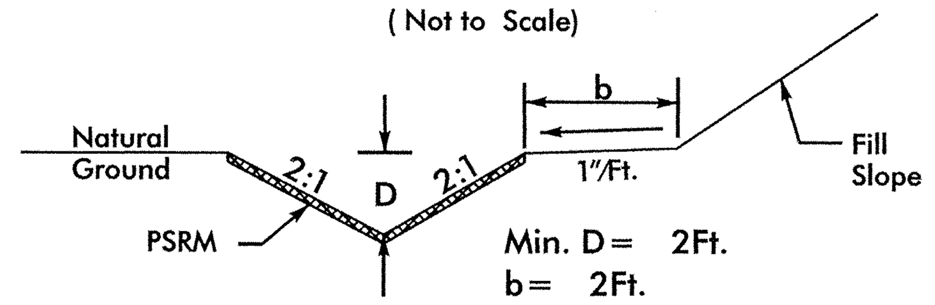




DETAIL A

SPECIAL FILL SLOPE 'V' DITCH

(Not to Scale)

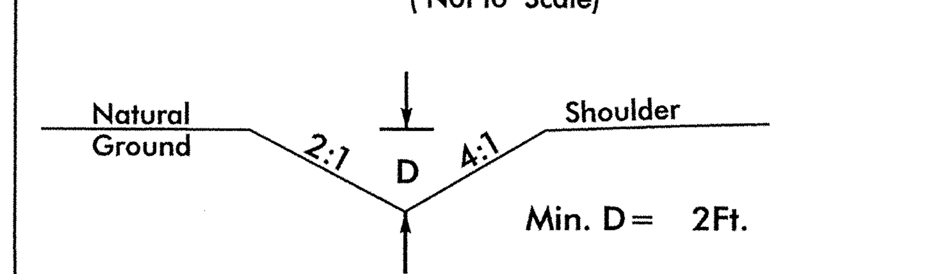


FROM -L- STA. 11+40 TO STA. 11+90 LT
FROM -L- STA. 12+30 TO STA. 13+05 LT

DETAIL B

ROADSIDE 'V' DITCH

(Not to Scale)



FROM -L- STA. 12+05 TO STA. 13+05 RT

5/14/99

1:12:15 PM
\projects\3215\Bridge060\Roadway\Proj\17BP14R56_RDY_PSH.dgn
baraas

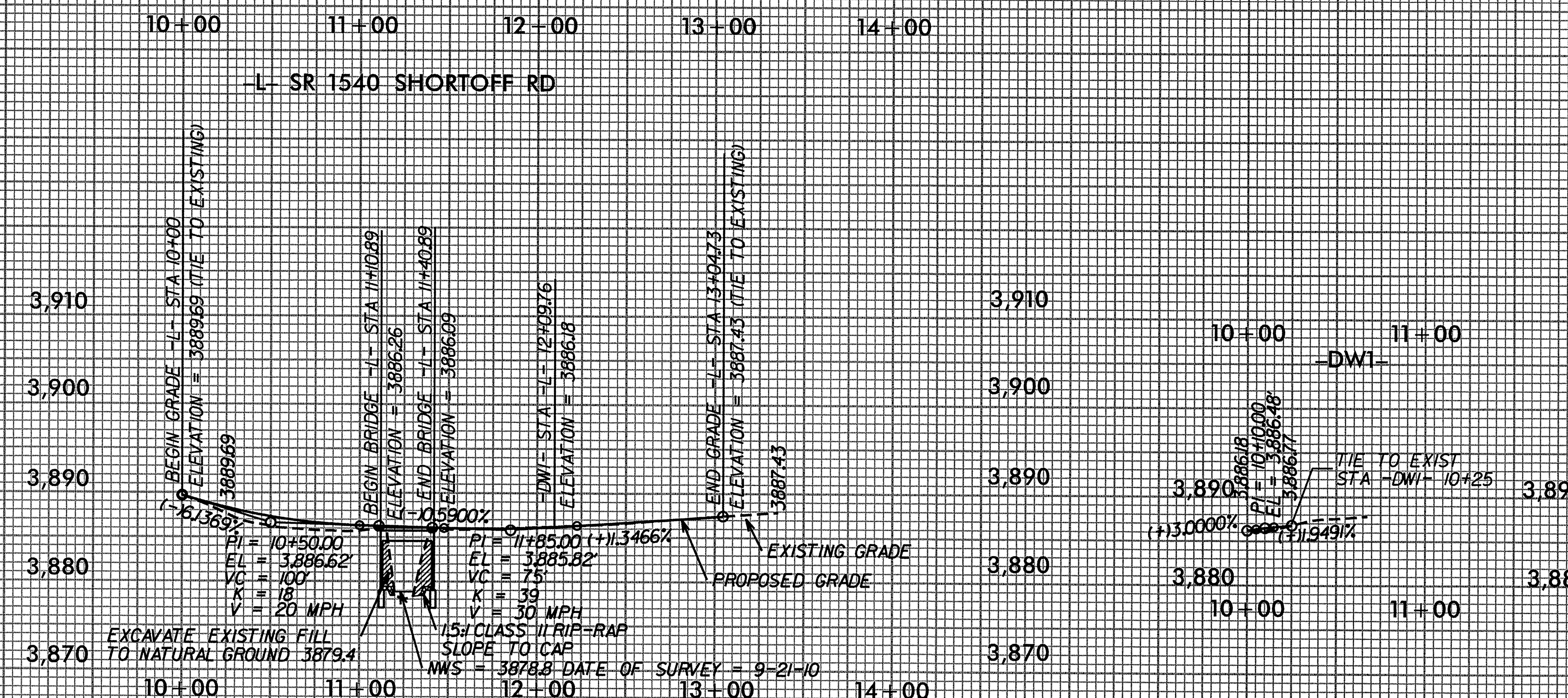
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.56	5

ROADWAY DESIGN ENGINEER — SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER, SEAL 022599, JAMES B. VOSO

HYDRAULICS ENGINEER — SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER, SEAL 028945, DANA J. BOLDEN

Prepared in the Office of: Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	850	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	3883.7	FT
BASE DISCHARGE	=	1200	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	3884.93	FT
OVERTOPPING DISCHARGE	=	1400	CFS
OVERTOPPING FREQUENCY	=	200 +/-	YRS
OVERTOPPING ELEVATION	=	3885.8	FT
DATE OF SURVEY	=	9-21-10	
W.S. ELEVATION AT DATE OF SURVEY	=	3878.8	FT

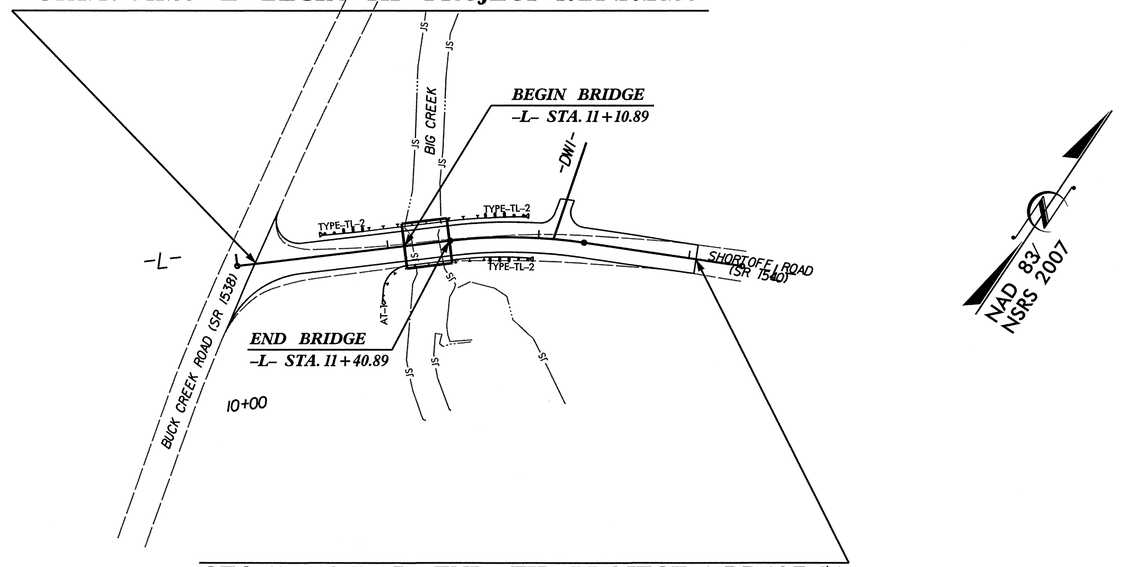
1:2:36 PM
\\192.168.13.10\projects\3215\Bridge060\Roadway\Proj\17BP14R56_RDY_PSH.dgn
baross

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MACON COUNTY

STA. 10+11.55 –L– BEGIN TIP PROJECT 17BP.14.R.56



STA. 13+04.73 –L– END TIP PROJECT 17BP.14.R.56

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-1C	STANDARD TEMPORARY SHORING DETAILS
TMP-2	TEMPORARY TRAFFIC CONTROL PHASE I
TMP-3	TEMPORARY TRAFFIC CONTROL PHASE II & III
PMP-1	PAVEMENT MARKING PLAN

SHEET NO.
TMP-1

17BP.14.R.56

TIP PROJECT:

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. — *STATE TRAFFIC MANAGEMENT ENGINEER*
JAMES VOSO, P.E. — *TRAFFIC CONTROL PROJECT ENGINEER*
JASON SNAPP, P.E. — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
BRIAN ROSS — *TRAFFIC CONTROL DESIGN ENGINEER*

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL *

Mattern & Craig
CONSULTING ENGINEERS • SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 • FAX (828) 254-4562

APPROVED: _____
DATE: 7/21/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

k23:24 PM
\\192.168.13.10\projects\3215\Bridge060\Traffic\TrafficControl\Roadway\17BP14R56_TC_TSH.dgn
bgross

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.56	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANAUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING PROPOSED TEMP TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION	PAY ITEM
PA	WHITE EDGELINE 2X	PAINT (4")
P2	WHITE STOP BAR 2X	PAINT (24")

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: _____ DATE: 1/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.56	TMP-1B

GENERAL NOTES / LOCAL NOTES

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES, MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A. DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

B. REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

C. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E. DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F. BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

G. DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

H. NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

I. INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

J. CONTRACTOR TO COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

K. ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC BARRIER

L. INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

M. PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45-50	20 FT
55	25 FT
60 MPH OR GREATER	30 FT

TRAFFIC CONTROL DEVICES

N. WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

O. PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

P. INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1540 SHORTOFF RD.	PAINT	NONE

Q. PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

R. TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

S. REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

T. IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 500 FT AND 500 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

LOCAL NOTES

CONTRACTOR TO MAINTAIN DRIVEWAY ACCESS AT ALL TIMES

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: _____ DATE: 11/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

PROJECT REFERENCE NO.	SHEET
17BP.14.R.56	TMP-1C

GEOTECHNICAL ENGINEER — SIGNATURE — DATE

ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO — SIGNATURE — DATE 12/1/14

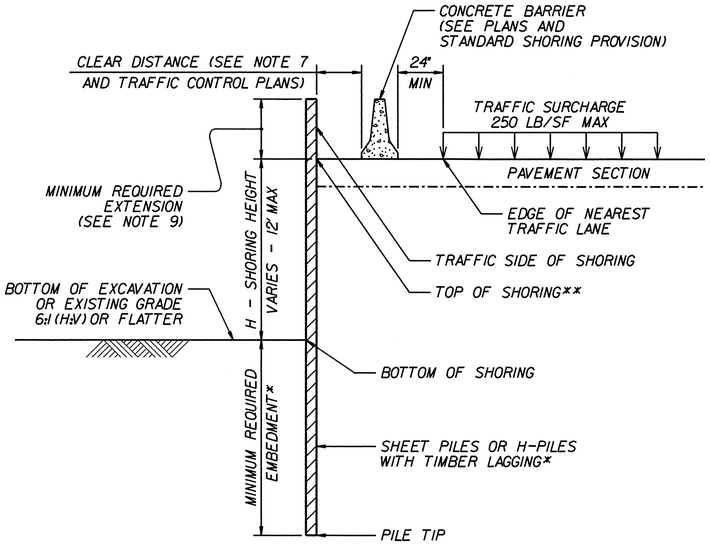
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

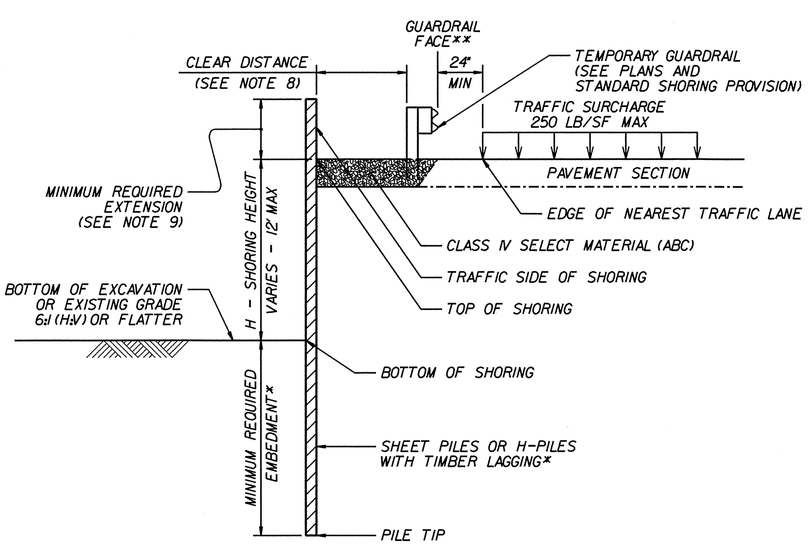
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



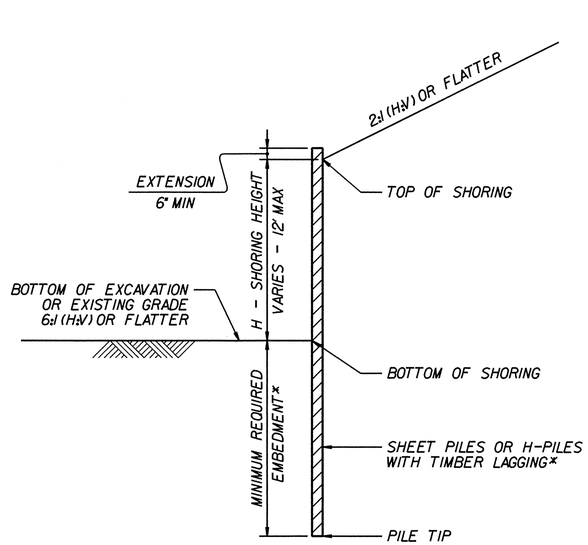
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

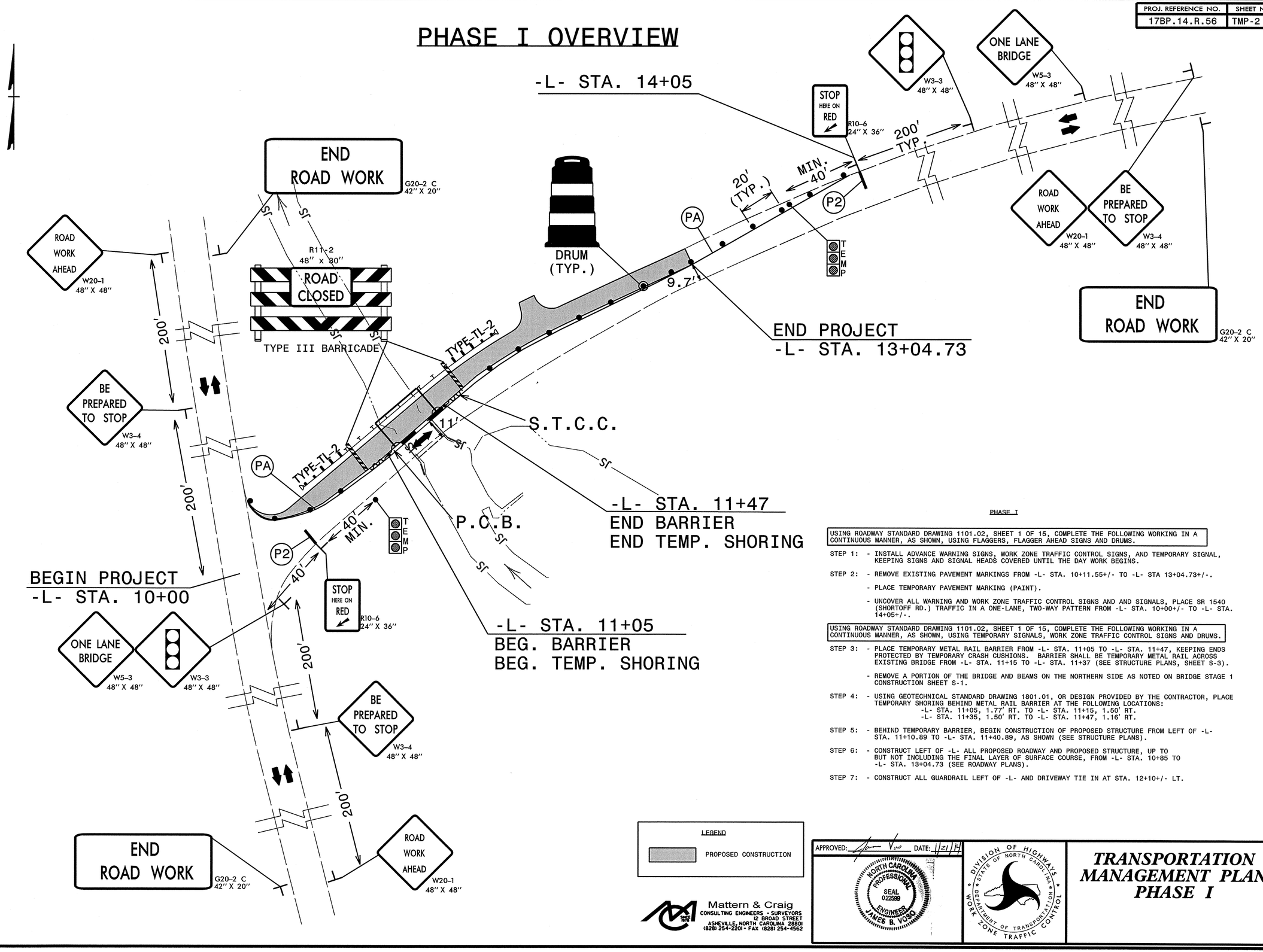
STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 1-17-12

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.56	TMP-2

PHASE I OVERVIEW



PHASE I

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING FLAGGERS, FLAGGER AHEAD SIGNS AND DRUMS.

STEP 1: - INSTALL ADVANCE WARNING SIGNS, WORK ZONE TRAFFIC CONTROL SIGNS, AND TEMPORARY SIGNAL, KEEPING SIGNS AND SIGNAL HEADS COVERED UNTIL THE DAY WORK BEGINS.

STEP 2: - REMOVE EXISTING PAVEMENT MARKINGS FROM -L- STA. 10+11.55+/- TO -L- STA 13+04.73+/-.

- PLACE TEMPORARY PAVEMENT MARKING (PAINT).

- UNCOVER ALL WARNING AND WORK ZONE TRAFFIC CONTROL SIGNS AND AND SIGNALS, PLACE SR 1540 (SHORTOFF RD.) TRAFFIC IN A ONE-LANE, TWO-WAY PATTERN FROM -L- STA. 10+00+/- TO -L- STA. 14+05+/-.

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORK ZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 3: - PLACE TEMPORARY METAL RAIL BARRIER FROM -L- STA. 11+05 TO -L- STA. 11+47, KEEPING ENDS PROTECTED BY TEMPORARY CRASH CUSHIONS. BARRIER SHALL BE TEMPORARY METAL RAIL ACROSS EXISTING BRIDGE FROM -L- STA. 11+15 TO -L- STA. 11+37 (SEE STRUCTURE PLANS, SHEET S-3).

- REMOVE A PORTION OF THE BRIDGE AND BEAMS ON THE NORTHERN SIDE AS NOTED ON BRIDGE STAGE 1 CONSTRUCTION SHEET S-1.

STEP 4: - USING GEOTECHNICAL STANDARD DRAWING 1801.01, OR DESIGN PROVIDED BY THE CONTRACTOR, PLACE TEMPORARY SHORING BEHIND METAL RAIL BARRIER AT THE FOLLOWING LOCATIONS:
-L- STA. 11+05, 1.77' RT. TO -L- STA. 11+15, 1.50' RT.
-L- STA. 11+35, 1.50' RT. TO -L- STA. 11+47, 1.16' RT.

STEP 5: - BEHIND TEMPORARY BARRIER, BEGIN CONSTRUCTION OF PROPOSED STRUCTURE FROM LEFT OF -L- STA. 11+10.89 TO -L- STA. 11+40.89, AS SHOWN (SEE STRUCTURE PLANS).

STEP 6: - CONSTRUCT LEFT OF -L- ALL PROPOSED ROADWAY AND PROPOSED STRUCTURE, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, FROM -L- STA. 10+85 TO -L- STA. 13+04.73 (SEE ROADWAY PLANS).

STEP 7: - CONSTRUCT ALL GUARDRAIL LEFT OF -L- AND DRIVEWAY TIE IN AT STA. 12+10+/- LT.

LEGEND

PROPOSED CONSTRUCTION

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: _____ DATE: 11/21/14

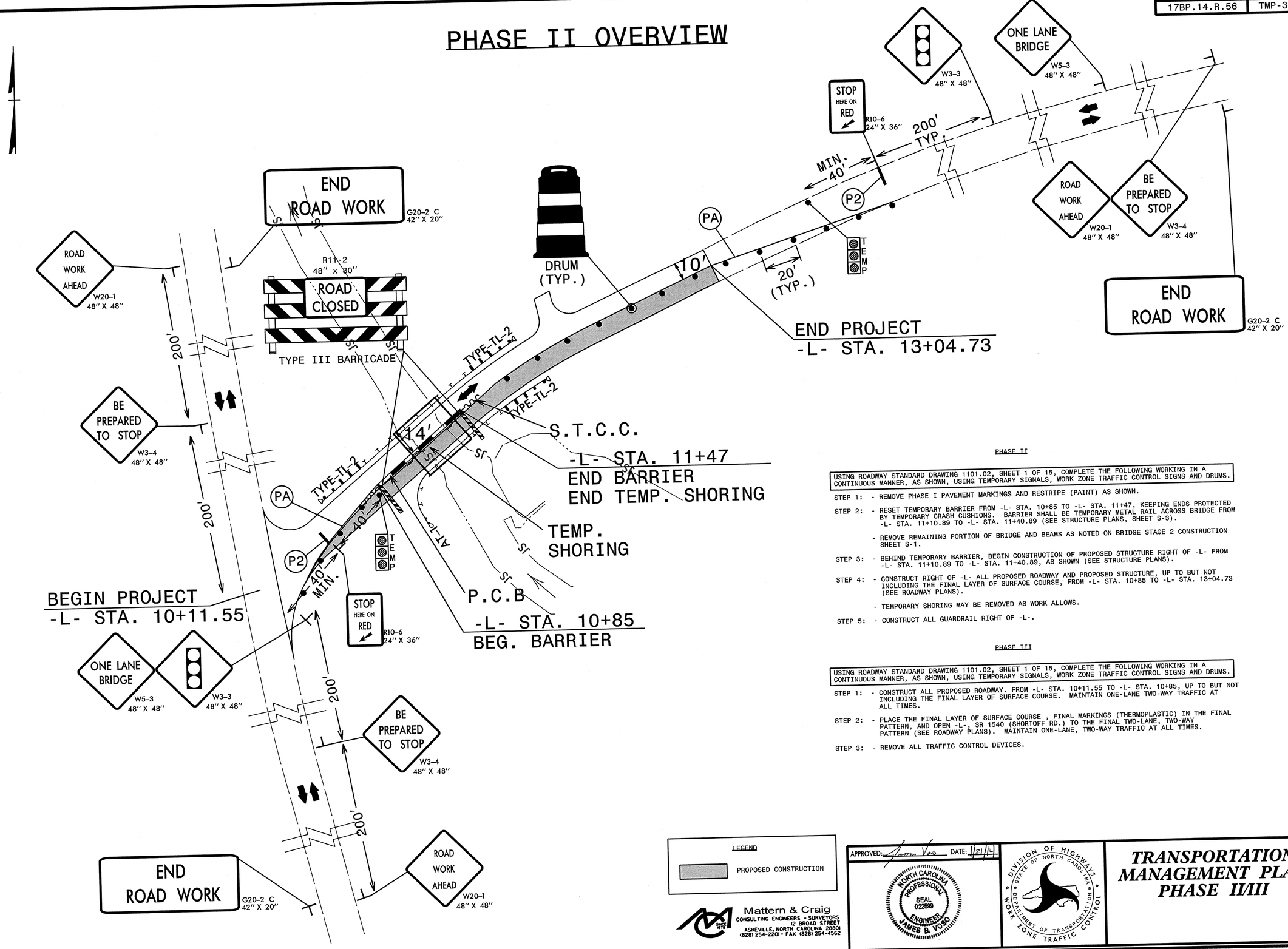
NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

TRANSPORTATION MANAGEMENT PLAN PHASE I

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.56	TMP-3

PHASE II OVERVIEW



PHASE II

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORK ZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 1: - REMOVE PHASE I PAVEMENT MARKINGS AND RESTRIPE (PAINT) AS SHOWN.

STEP 2: - RESET TEMPORARY BARRIER FROM -L- STA. 10+85 TO -L- STA. 11+47, KEEPING ENDS PROTECTED BY TEMPORARY CRASH CUSHIONS. BARRIER SHALL BE TEMPORARY METAL RAIL ACROSS BRIDGE FROM -L- STA. 11+10.89 TO -L- STA. 11+40.89 (SEE STRUCTURE PLANS, SHEET S-3).

- REMOVE REMAINING PORTION OF BRIDGE AND BEAMS AS NOTED ON BRIDGE STAGE 2 CONSTRUCTION SHEET S-1.

STEP 3: - BEHIND TEMPORARY BARRIER, BEGIN CONSTRUCTION OF PROPOSED STRUCTURE RIGHT OF -L- FROM -L- STA. 11+10.89 TO -L- STA. 11+40.89, AS SHOWN (SEE STRUCTURE PLANS).

STEP 4: - CONSTRUCT RIGHT OF -L- ALL PROPOSED ROADWAY AND PROPOSED STRUCTURE, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, FROM -L- STA. 10+85 TO -L- STA. 13+04.73 (SEE ROADWAY PLANS).

- TEMPORARY SHORING MAY BE REMOVED AS WORK ALLOWS.

STEP 5: - CONSTRUCT ALL GUARDRAIL RIGHT OF -L-.

PHASE III

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORK ZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 1: - CONSTRUCT ALL PROPOSED ROADWAY. FROM -L- STA. 10+11.55 TO -L- STA. 10+85, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. MAINTAIN ONE-LANE TWO-WAY TRAFFIC AT ALL TIMES.

STEP 2: - PLACE THE FINAL LAYER OF SURFACE COURSE , FINAL MARKINGS (THERMOPLASTIC) IN THE FINAL PATTERN, AND OPEN -L-, SR 1540 (SHORTOFF RD.) TO THE FINAL TWO-LANE, TWO-WAY PATTERN (SEE ROADWAY PLANS). MAINTAIN ONE-LANE, TWO-WAY TRAFFIC AT ALL TIMES.

STEP 3: - REMOVE ALL TRAFFIC CONTROL DEVICES.

LEGEND

PROPOSED CONSTRUCTION

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: DATE: 12/11

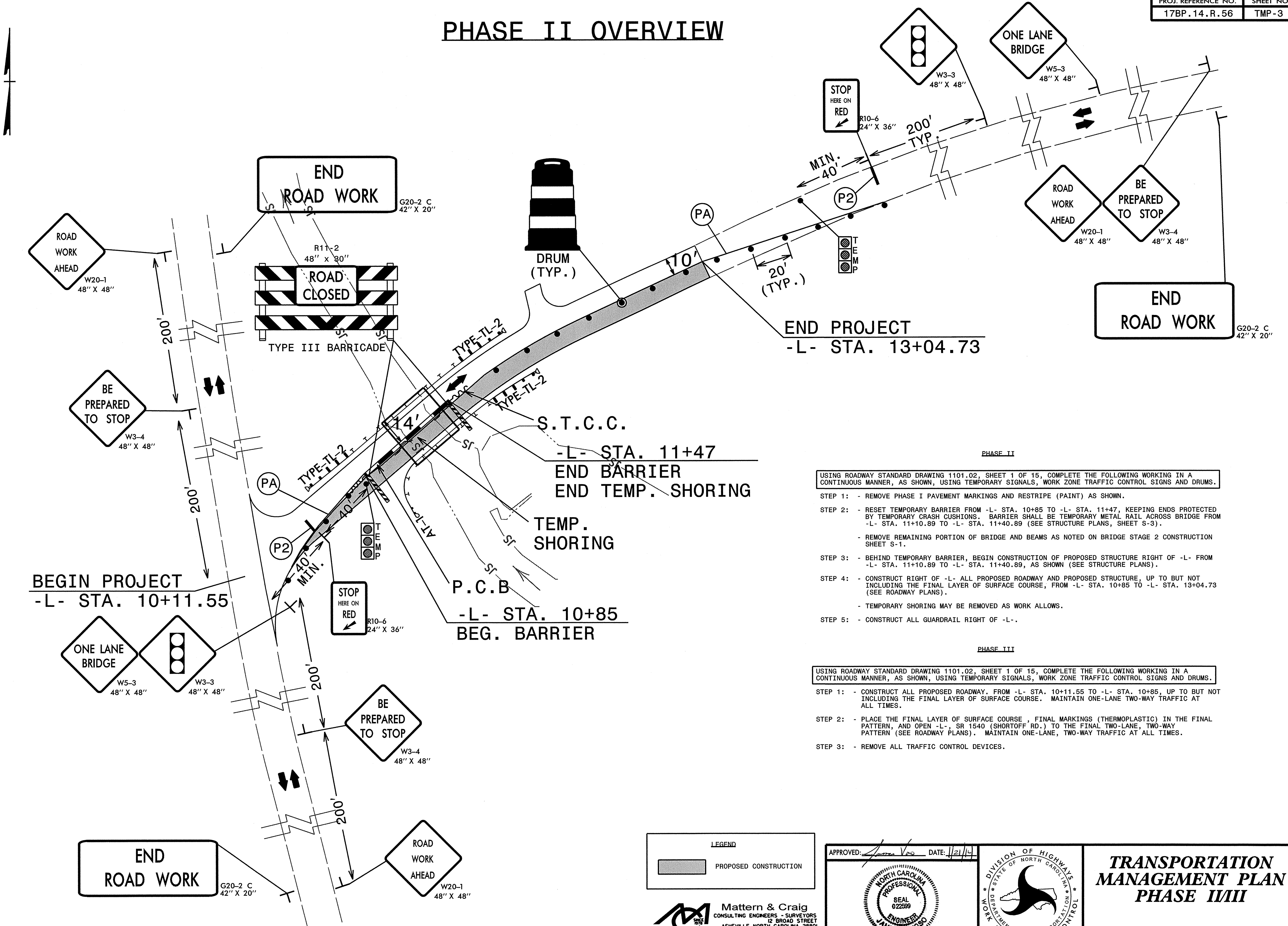
NORTH CAROLINA PROFESSIONAL SEAL 022299 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

TRANSPORTATION MANAGEMENT PLAN PHASE II/III

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.56	TMP-3

PHASE II OVERVIEW



PHASE II

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORK ZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 1: - REMOVE PHASE I PAVEMENT MARKINGS AND RESTRIPE (PAINT) AS SHOWN.

STEP 2: - RESET TEMPORARY BARRIER FROM -L- STA. 10+85 TO -L- STA. 11+47, KEEPING ENDS PROTECTED BY TEMPORARY CRASH CUSHIONS. BARRIER SHALL BE TEMPORARY METAL RAIL ACROSS BRIDGE FROM -L- STA. 11+10.89 TO -L- STA. 11+40.89 (SEE STRUCTURE PLANS, SHEET S-3).

- REMOVE REMAINING PORTION OF BRIDGE AND BEAMS AS NOTED ON BRIDGE STAGE 2 CONSTRUCTION SHEET S-1.

STEP 3: - BEHIND TEMPORARY BARRIER, BEGIN CONSTRUCTION OF PROPOSED STRUCTURE RIGHT OF -L- FROM -L- STA. 11+10.89 TO -L- STA. 11+40.89, AS SHOWN (SEE STRUCTURE PLANS).

STEP 4: - CONSTRUCT RIGHT OF -L- ALL PROPOSED ROADWAY AND PROPOSED STRUCTURE, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, FROM -L- STA. 10+85 TO -L- STA. 13+04.73 (SEE ROADWAY PLANS).

- TEMPORARY SHORING MAY BE REMOVED AS WORK ALLOWS.

STEP 5: - CONSTRUCT ALL GUARDRAIL RIGHT OF -L-.

PHASE III

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORK ZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 1: - CONSTRUCT ALL PROPOSED ROADWAY. FROM -L- STA. 10+11.55 TO -L- STA. 10+85, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. MAINTAIN ONE-LANE TWO-WAY TRAFFIC AT ALL TIMES.

STEP 2: - PLACE THE FINAL LAYER OF SURFACE COURSE , FINAL MARKINGS (THERMOPLASTIC) IN THE FINAL PATTERN, AND OPEN -L-, SR 1540 (SHORTOFF RD.) TO THE FINAL TWO-LANE, TWO-WAY PATTERN (SEE ROADWAY PLANS). MAINTAIN ONE-LANE, TWO-WAY TRAFFIC AT ALL TIMES.

STEP 3: - REMOVE ALL TRAFFIC CONTROL DEVICES.

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: [signature] DATE: 1/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

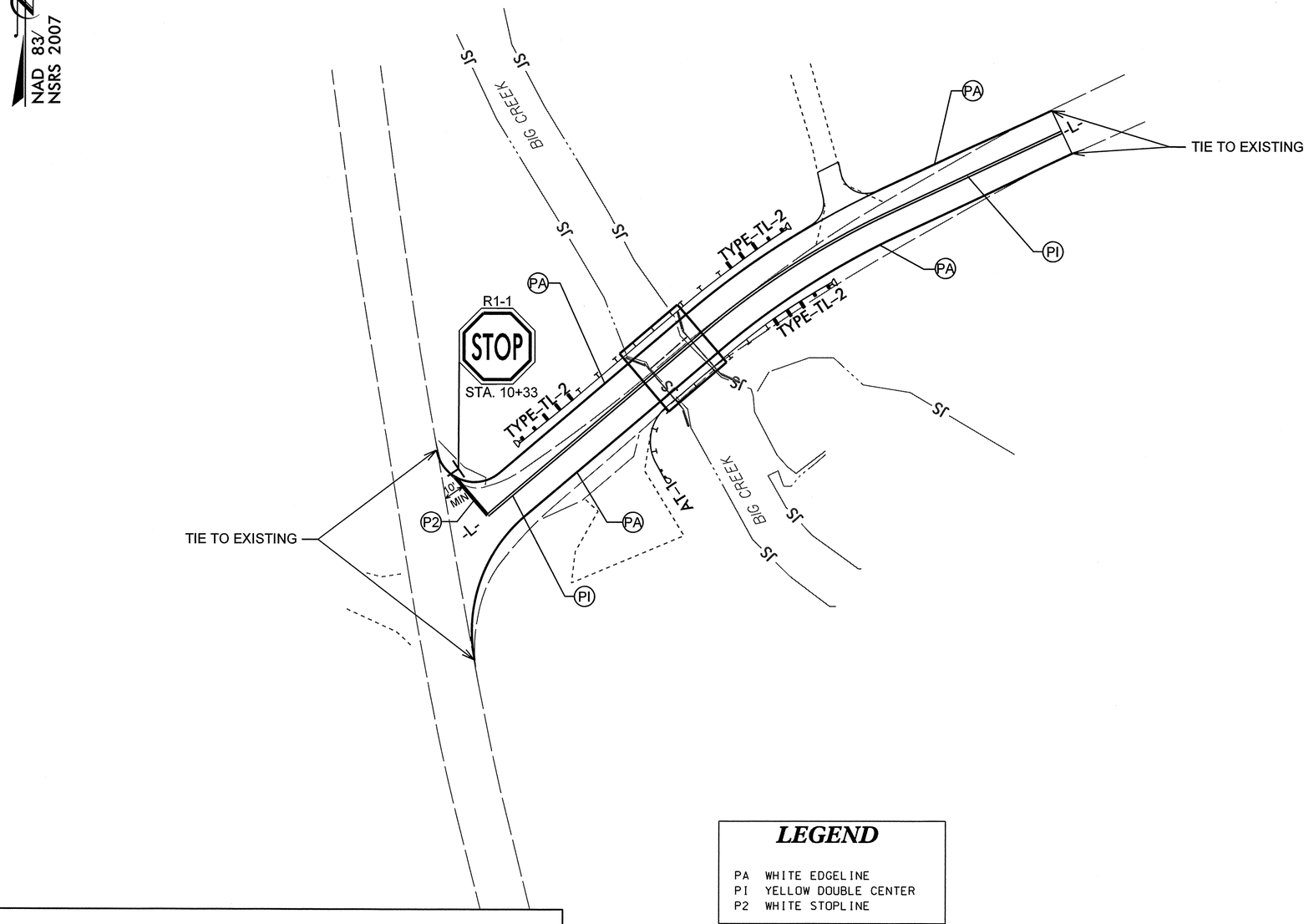
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION MANAGEMENT PLAN PHASE II/III

1:26:31 PM
\\192.168.13.10\projects\3215\Bridge060\Traffic\TrafficControl\Roadway\17BP14R56_TC_TMP3.dgn
bgross

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.56	PMP-1

NAD 83/
NSRS 2007



LEGEND

PA	WHITE EDGELINE
PI	YELLOW DOUBLE CENTER
P2	WHITE STOPLINE

PROJECT MARKING SCHEDULE
BRIDGE 060

SYMBOL	DESCRIPTION	PAY ITEM	PAY ITEM QUANTITY
PI	YELLOW DOUBLE CENTER	PAINT 4" (DOUBLE COAT)	1,120 LF
PA	WHITE EDGELINE	PAINT 4" (DOUBLE COAT)	1,240 LF
P2	WHITE STOPLINE	PAINT 24" (DOUBLE COAT)	30 LF

GRAPHIC SCALE
25' 0' 25' 50'
100'
PLANS

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: _____ DATE: 1/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

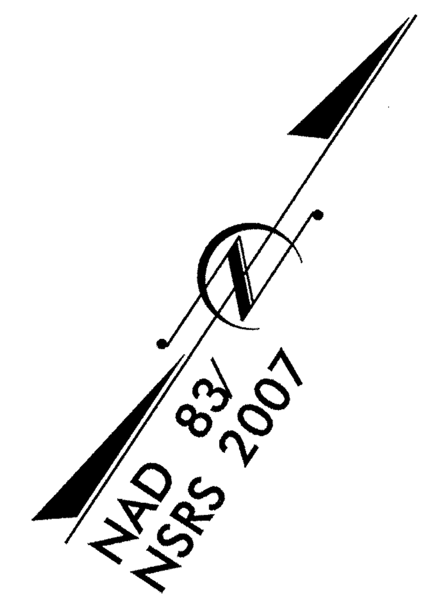
PAVEMENT MARKING PLAN

8:53:18 AM
\\192.168.13.10\projects\3215\Bridge060\Traffic\TrafficControl\Roadway\17BP14R56_TC_PMPl.dgn
bgross

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.56	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

PROJECT NO: 17BP.14.R.56

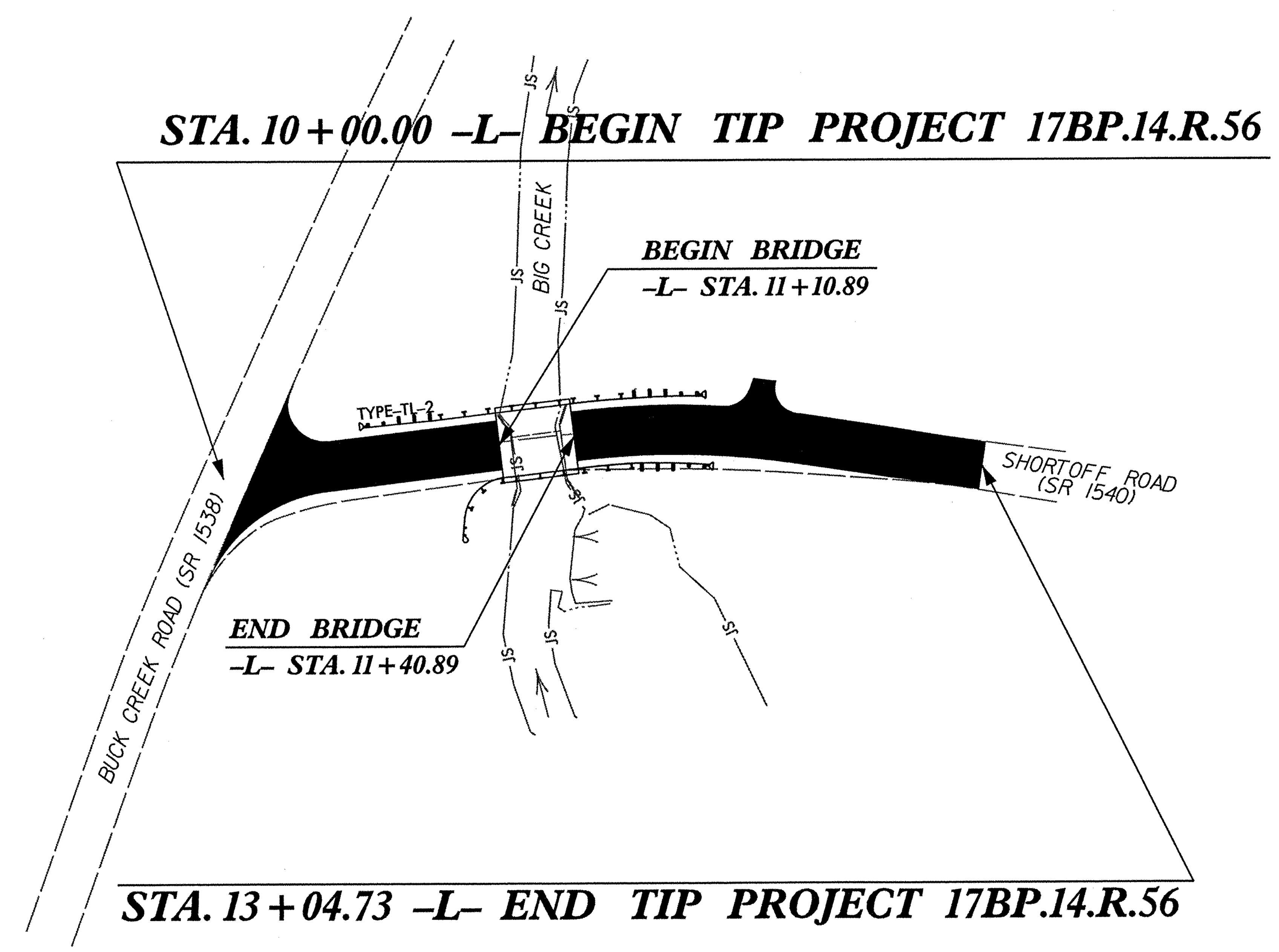


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MACON COUNTY

LOCATION: BRIDGE 060 OVER BIG CREEK
ON SR 1540 (SHORTOFF ROAD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE



DANA BOLDEN
LEVEL IIIA NAME

3171
LEVEL IIIA CERTIFICATION NO.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	BW / CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist
From Sta. 11+20+/-
to Sta. 11+40+/-
Refer To E. C. Special Provisions for Special Considerations.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE

0 50
PLANS

0 50
PROFILE (HORIZONTAL)

0 10
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562
SINCE 1978

Reviewed in the Office of:

1 South Wilmington St.
Raleigh, NC 27611

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Temporary Berms and Slope Drains
1630.01	Riser Basin
1630.02	Silt Basin Type B
1630.03	Temporary Silt Ditch
1630.04	Stilling Basin
1630.05	Temporary Diversion
1630.06	Special Stilling Basin
1631.01	Matting Installation
1632.01	Rock Inlet Sediment Trap Type A
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
1634.01	Temporary Rock Sediment Dam Type A
1634.02	Temporary Rock Sediment Dam Type B
1635.01	Rock Pipe Inlet Sediment Trap Type A
1635.02	Rock Pipe Inlet Sediment Trap Type B
1640.01	Coir Fiber Baffle
1645.01	Temporary Stream Crossing

1:17:43 PM
ts\3215\Bridge060\Environmental\Design\17BP14R56_EC_TSH.dgn
bgross

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.56	EC-2
R/W SHEET NO.	

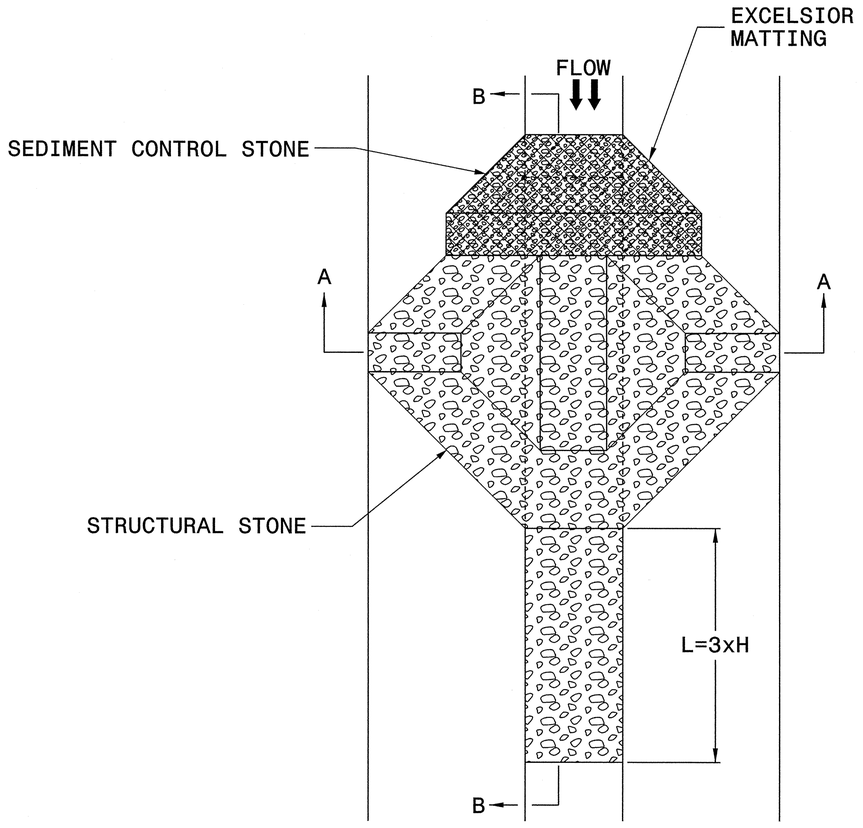
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022598 ENGINEER JAMES B. VOSO

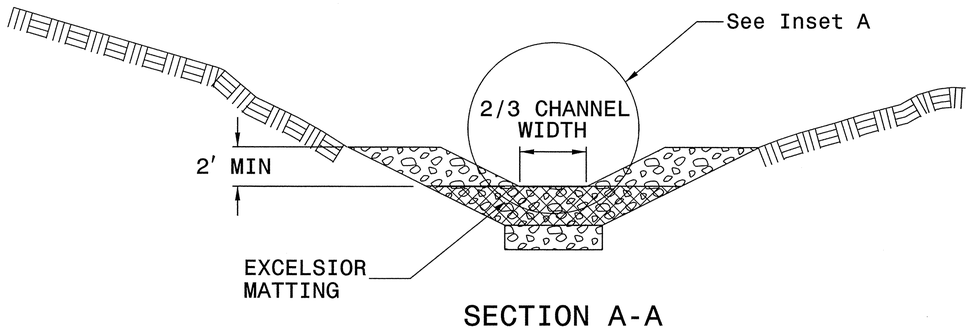
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028945 ENGINEER DAWN J. BOLDEN

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



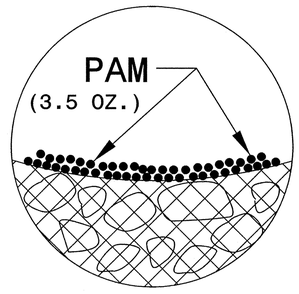
SECTION A-A

NOTES

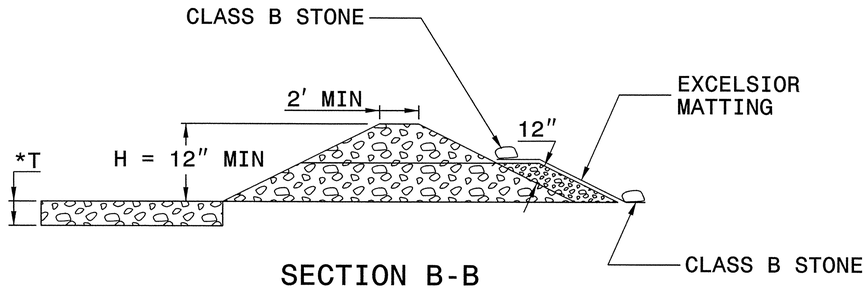
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION B-B

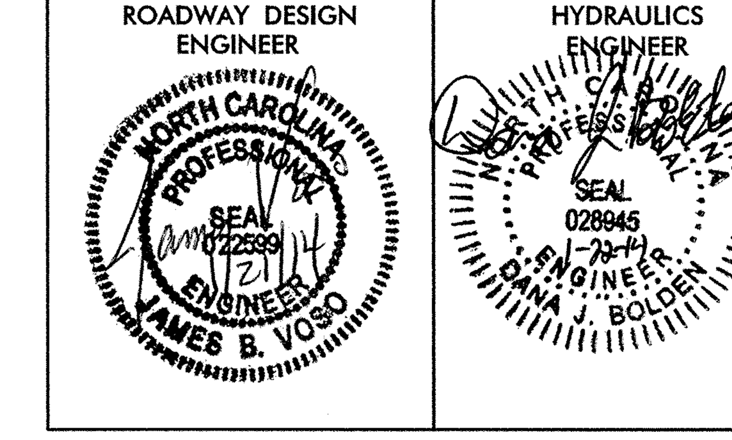
*T = 12" MIN., 18" MAX.

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.56	EC-3

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMNT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	11+40	11+90	LT	50
4	-L-	11+90	13+05	LT	55
				SUBTOTAL	105
	ADDITIONAL PSRM TO BE INSTALLED				0
				TOTAL	105
				SAY	105

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	0
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1000
				TOTAL	1000
				SAY	1000

PROJECT REFERENCE NO.	SHEET NO.
17BRPJ4.R.56	EC-3A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042999 ENGINEER JAMES B. VOSO

HYDRAULICS ENGINEER

SEAL 028945 7-29-19 ENGINEER JOHN J. BOLDEN

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
117BPJ4R56	EC-4
R/W SHEET NO.	

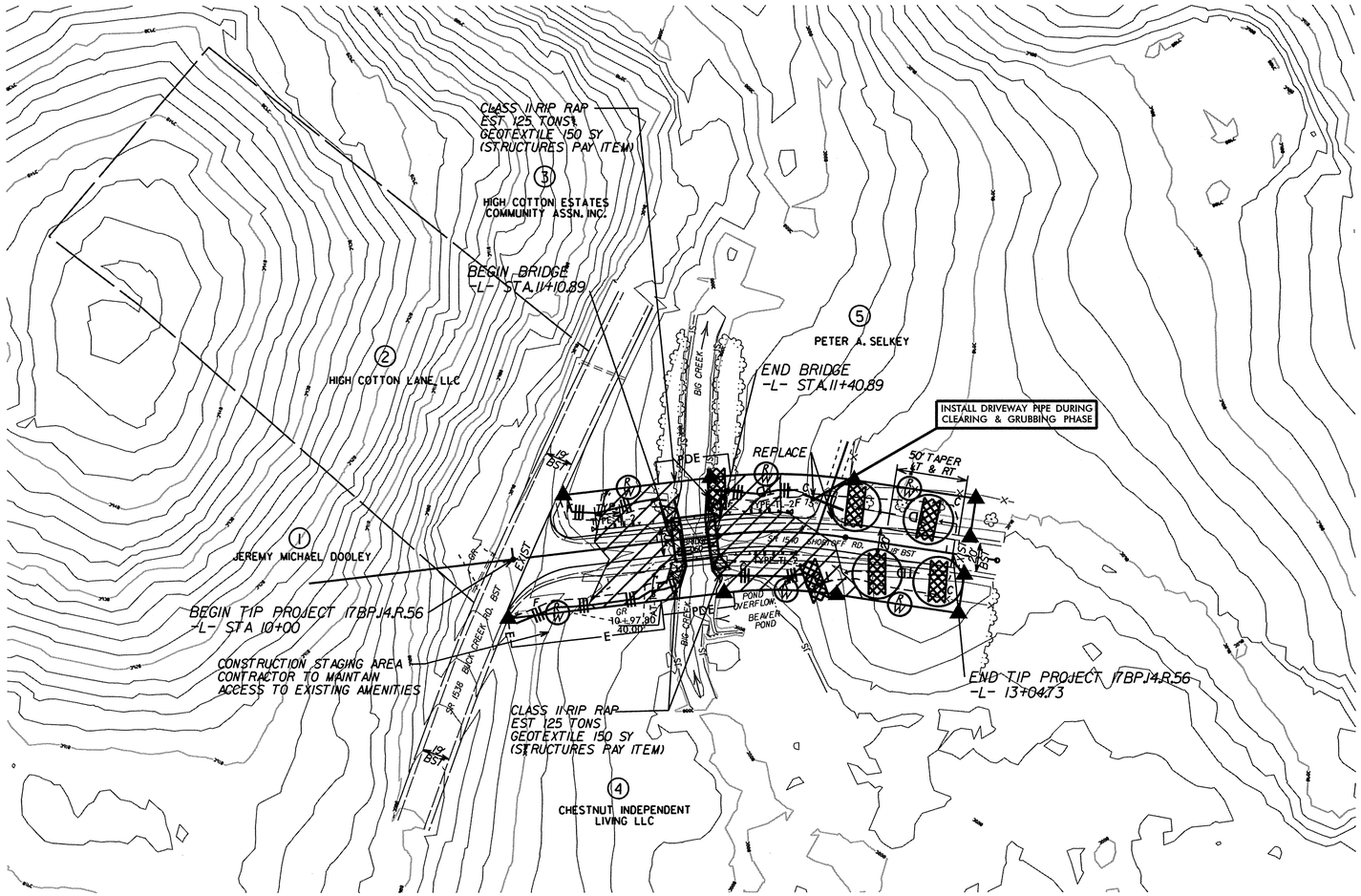
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022263 ENGINEER JAMES B. VOSO

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028945 ENGINEER DANA J. BOLDEN

NAD 83/ NSRS 2007



CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

IF ANY PUMPED DEWATERING IS REQUIRED, A SPECIAL STILLING BASIN SHALL BE PROVIDED AS NEEDED

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE:
UTILIZE TEMPORARY SILT CHECK TYPE – A AS STILLING BASIN WHERE APPLICABLE.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.56	EC-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022633 ENGINEER JAMES B. VOSO

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028945 ENGINEER DIANA J. BOLDEN

Place Matting for Erosion Control on Slope as Work Allows.

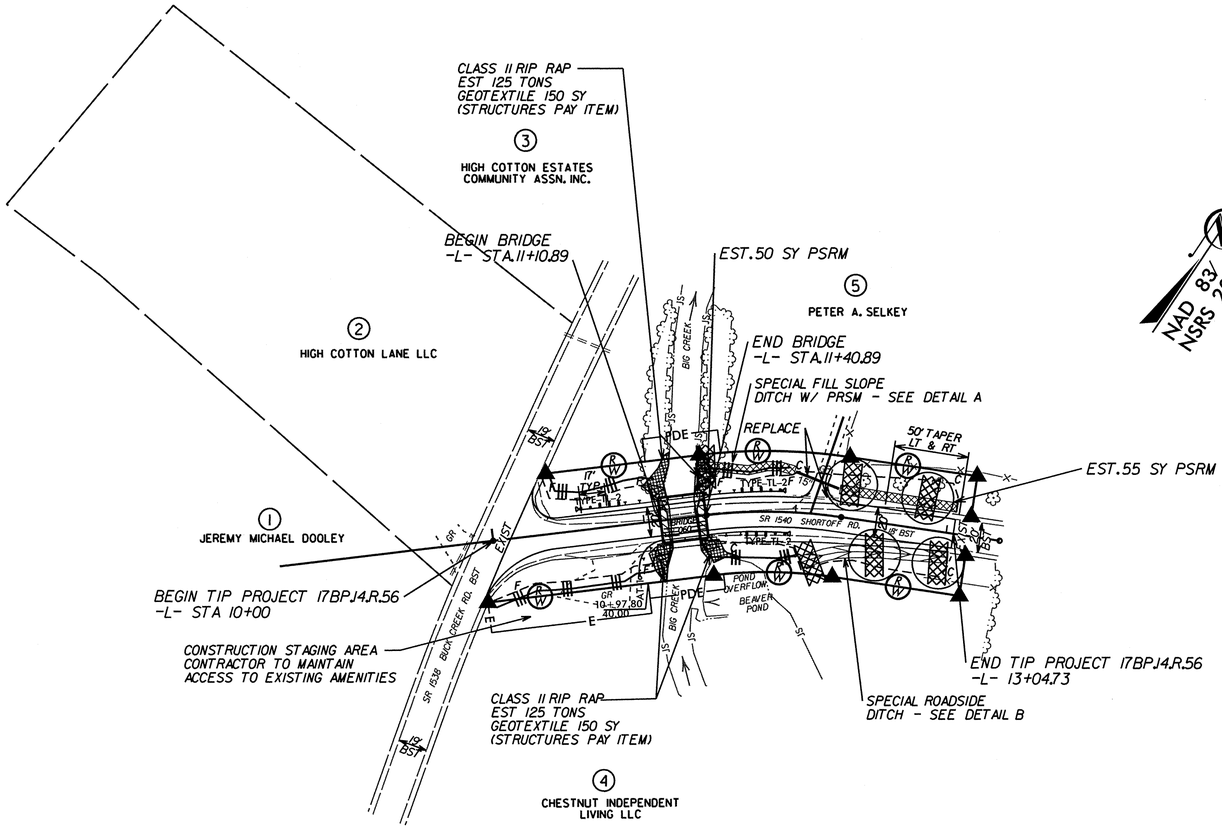
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

IF ANY PUMPED DEWATERING IS REQUIRED, A SPECIAL STILLING BASIN SHALL BE PROVIDED AS NEEDED

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE:
UTILIZE TEMPORARY SILT CHECK TYPE – A AS STILLING BASIN WHERE APPLICABLE.

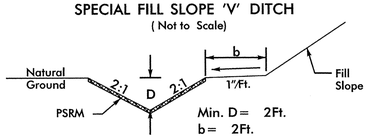


NAD 83/ NSRS 2007

DETAIL A

SPECIAL FILL SLOPE 'V' DITCH

(Not to Scale)

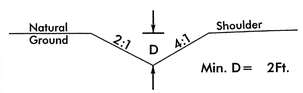


FROM –L– STA. 11+40 TO STA. 11+90 LT
FROM –L– STA. 12+30 TO STA. 13+05 LT

DETAIL B

ROADSIDE 'V' DITCH

(Not to Scale)



FROM –L– STA. 12+05 TO STA. 13+05 RT

PROJECT REFERENCE NO.	SHEET NO.
17BP14.R.56	EC-6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

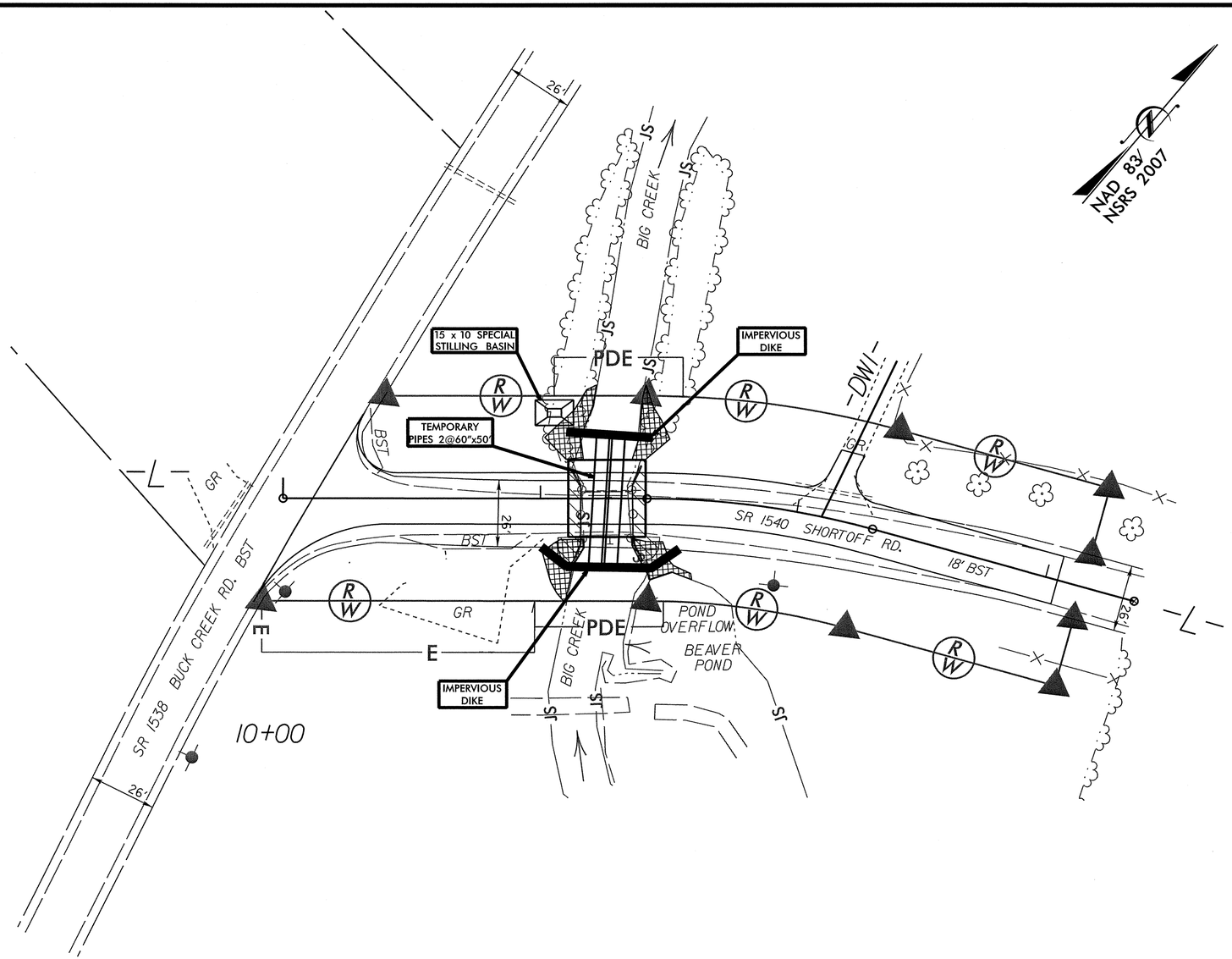
NORTH CAROLINA PROFESSIONAL SEAL 029249 ENGINEER JAMES B. VOSS

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026945 ENGINEER DANA J. BOLDEN

CULVERT CONSTRUCTION SEQUENCE STA. 11+25 -L-

1. COSTRUCT SPECIAL STILLING BASIN (15' X 10').
2. CONSTRUCT TEMPORARY DIVERSION PIPES 2 @ 60" x 50'. CONSTRUCT IMPERVIOUS DIKES TO A HEIGHT OF 1' ABOVE TEMPORARY PIPES.
3. CONSTRUCT PROPOSED CULVERT AND PORTION OF INLET/OUTLET CHANNEL IMPROVEMENTS.
4. REMOVE IMPERVIOUS DIKE AND TEMPORARY CHANNEL CHANGE, DIVERTING FLOW THROUGH CULVERT.
5. CONSTRUCT REMAINDER OF INLET/OUTLET CHANNEL IMPROVEMENTS.



SPECIAL STILLING BASIN:

Description

This work consists of furnishing, placing, and removing special stilling basin(s) as directed. The special stilling basin shall be used to filter pumped water during construction of drilled piers, footing excavation, and/or culvert construction. The special stilling basin shall also be used for sediment storage at the outlet of temporary slope drain pipe(s).

Materials

Refer to Division 10

Item	Section
Filter Fabric for Drainage, Type 2	1056
Sediment Control Stone	1005

The filter fabric and sediment control stone shall be clean and shall not contain debris.

The special stilling basin shall be a water permeable fabric bag that traps sand, silt, and fines as sediment-laden water is pumped into it, or as runoff flows into it through the temporary slope drain pipe(s).

The special stilling basin shall be a bag constructed to a minimum size of 10* x 15* made from a nonwoven fabric. It shall have a sewn-in 8" (maximum) spout for receiving pump discharge. The bag seams shall be sewn with a double needle machine using a high strength thread. The seams shall have a minimum wide width strength as follows:

Test Method	Minimum Specifications
ASTM D-4884	60 lb/in

The fabric used to construct the bag shall be stabilized to provide resistance to ultra-violet degradation and meet the following specifications for flow rates, strength, and permeability:

Property	Test Method	Minimum Specifications
Weight	ASTM D-3776	8.0 oz/yd
Grab tensile	ASTM D-4632	200.0 lb
Puncture	ASTM D-4833	130.0 lb
Flow rate	ASTM D-4491	80.0 gal/min/sf
Permittivity	ASTM D-4491	1.2 1/sec
UV Resistance	ASTM D-4355	70.0%

Construction Methods

The Contractor shall install the special stilling basin(s), filter fabric, and stone in accordance with Standard Drawing No. 1630.06 and at locations on the plans and as directed.

The special stilling basin(s) shall be constructed such that it is portable and can be used adjacent to each drilled pier, footing, and/or culvert. Temporary slope drain pipe(s) shall be attached to the special stilling basin(s) so that the runoff in the slope drain pipe(s) flows directly into the special stilling basin(s). The special stilling basin(s) shall be placed so the incoming water flows into and through the bag without causing erosion. The neck or spout of the bag shall be tied off tightly to stop the water from flowing out of the bag without going through the walls. If applicable, the neck or spout of the silt bag shall be cut to allow for a slope drain pipe to be inserted into the special stilling basin, and tied off tightly to stop the water from flowing out of the bag.

The special stilling basin(s) shall be replaced and disposed of when it is * full of sediment or when it is impractical for the bag to filter the sediment out at a reasonable flow rate. Prior approval from the Engineer shall be received before removal and replacement.

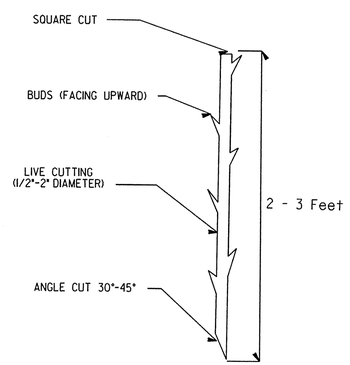
The Contractor shall be responsible for providing a sufficient quantity of bags to contain silt from pumped effluent during construction of drilled piers, footing excavation, and/or culvert construction. A sufficient quantity of special stilling basins shall be provided to contain sediment from temporary slope drain runoff.

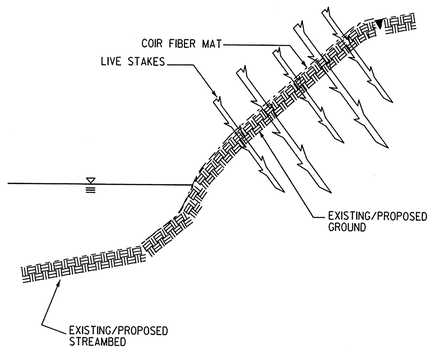
The quantity of sediment control stone, filter fabric for drainage, and special stilling basin(s) as measured above will be paid for at contract price for "Lump Sum for Erosion Control". Such price and payment will be full compensation for all work covered by this provision, including but not limted to, furnishing all materials, placing and maintaining the special stilling basin(s), and removal and disposal of silt accumulations and bag.

PLANTING DETAILS

LIVE STAKES PLANTING DETAIL

LIVE STAKE

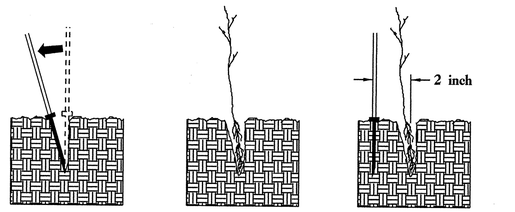




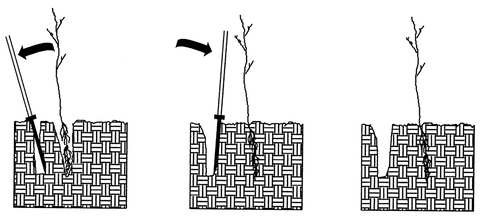
BANK STABILIZATION WITH LIVE STAKES

NOTE:
LIVE STAKES SHALL BE SPACED APPROXIMATELY 4 FEET ON CENTER
LIVE STAKES SHALL BE DRIVEN UNTIL APPROXIMATELY 3/4 OF LIVE STAKE IS WITHIN GROUND

BAREROOT PLANTING DETAIL
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

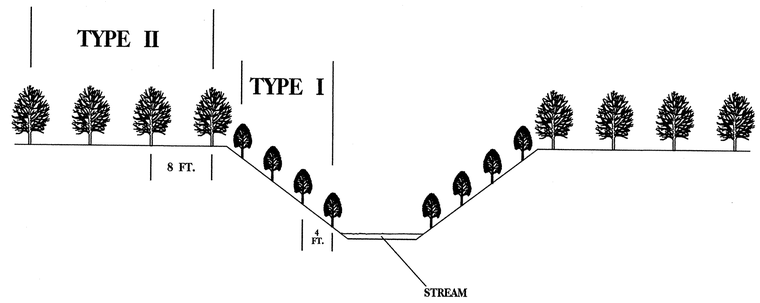
ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

☐ TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.

☐ TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

☐ NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

TYPE 1			
50%	SALIX NIGRA	BLACK WILLOW	2 ft – 3 ft LIVE STAKES
50%	CORNUS AMOMUM	SILKY DOGWOOD	2 ft – 3 ft LIVE STAKES
TYPE 2			
25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	PRUNUS SEROTINA	BLACK CHERRY	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

☐ SEE PLAN SHEETS FOR AREAS TO BE PLANTED

PROJECT REFERENCE NO.	SHEET NO.
117BPJ4.R.56	RF-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

HYDRAULICS ENGINEER

SEAL 028945 ENGINEER DANIEL J. BOLEEN

STREAMBANK REFORESTATION
DETAIL SHEET 1 OF 2

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

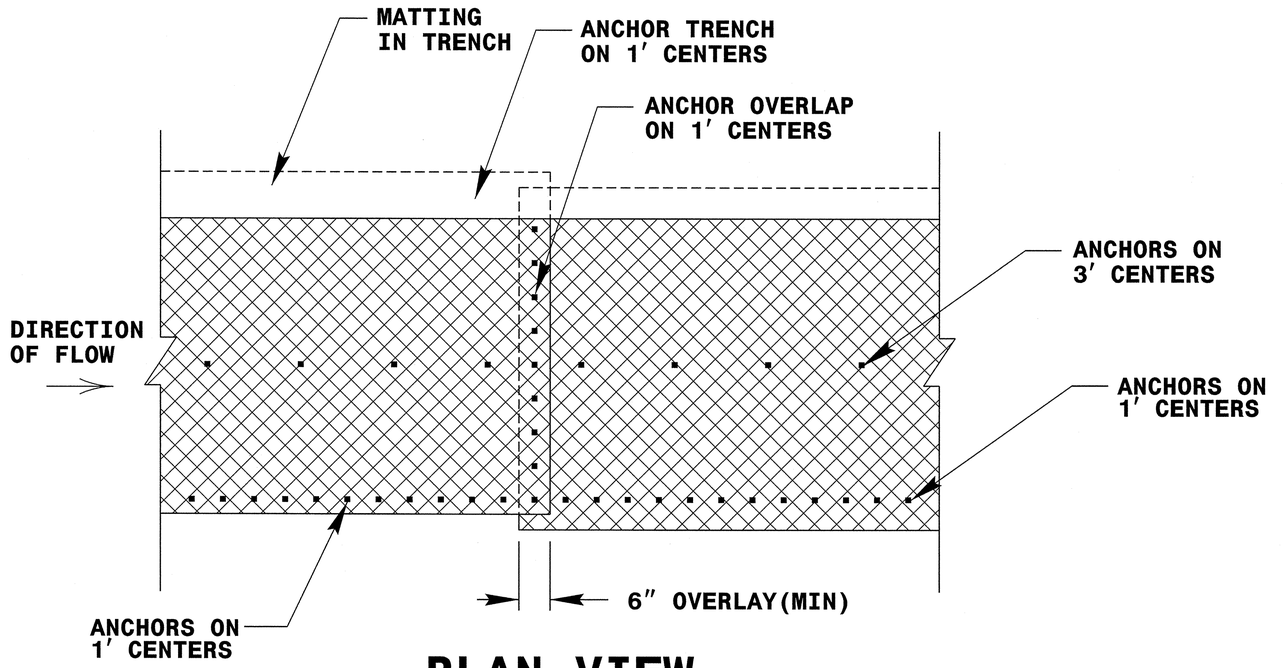
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.56	RF-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

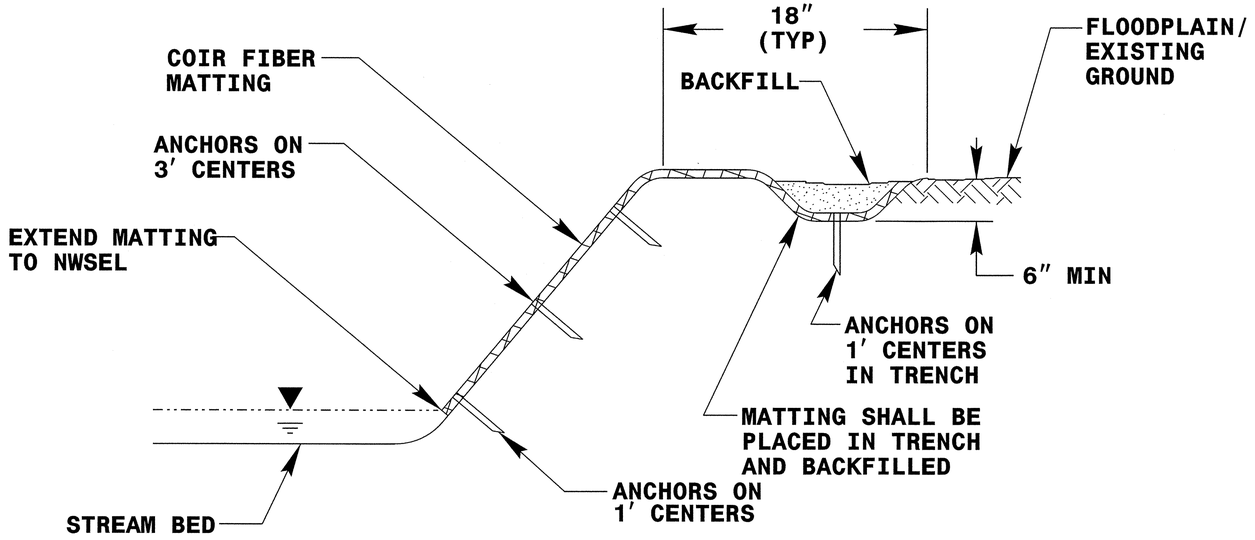
NORTH CAROLINA PROFESSIONAL SEAL 022569 ENGINEER JAMES B. VOSO

HYDRAULICS ENGINEER

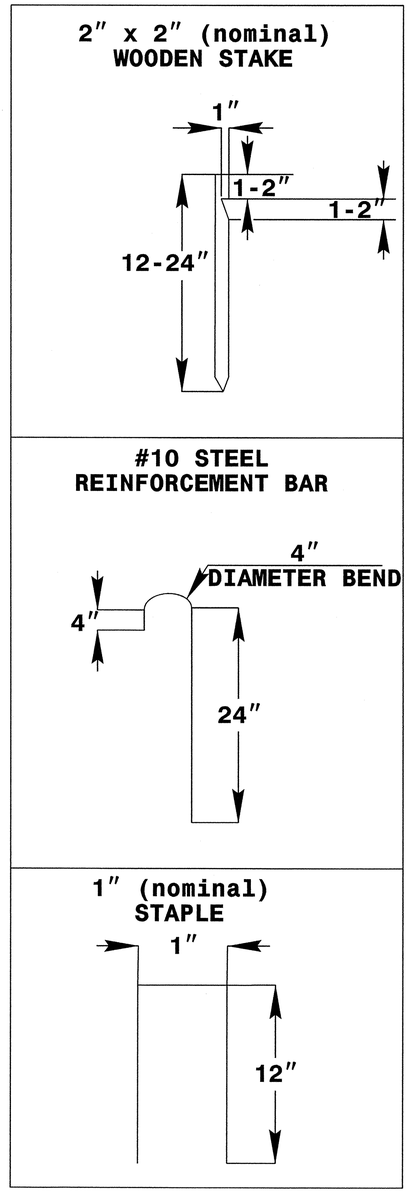
SEAL 028945 ENGINEER DANA L. BOLDEN



PLAN VIEW



TYPICAL CROSS SECTION



ANCHOR OPTIONS

COIR FIBER MATTING DETAIL

NOT TO SCALE

STREAMBANK REFORESTATION

DETAIL SHEET 2 OF 2

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

6/2/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CROSS SECTION SUMMARY

PHASE I

LOCATION	UNCLASSIFIED EXCAVATION	EMBT + %
–L– 10+00 TO 10+50	0	8
–L– 10+50 TO 11+00	0	62
–L– 11+00 TO 11+50	5	110
–L– 11+50 TO 12+00	26	43
–L– 12+00 TO 12+50	47	4
–L– 12+50 TO 13+00	91	2
–L– 13+00 TO 13+04	5	0
TOTALS	174	229

PHASE II

LOCATION	UNCLASSIFIED EXCAVATION	EMBT + %
–L– 10+00 TO 10+50	0	27
–L– 10+50 TO 11+00	1	21
–L– 11+00 TO 11+50	3	83
–L– 11+50 TO 12+00	47	0
–L– 12+00 TO 12+50	81	0
–L– 12+50 TO 13+00	69	2
–L– 13+00 TO 13+04	4	0
TOTALS	205	133

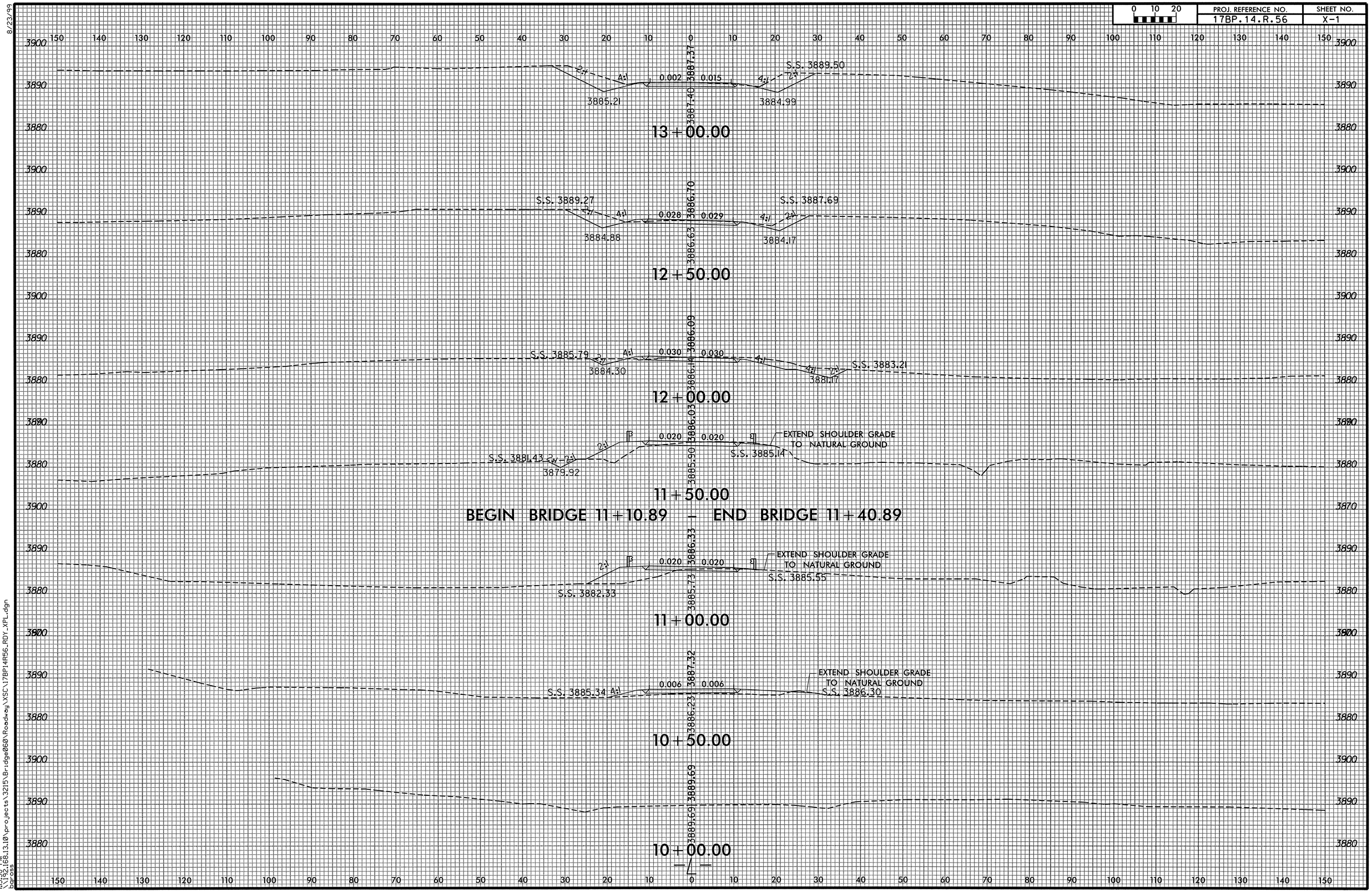
Note: Embankment column does not include fill for undercut.

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

1:11:03 PM
\\192.168.13.10\projects\3215\Bridge060\Roadway\Proj\17BP14R56_RDY_TYP.dgn
bgross

8/23/99

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.56	X-1

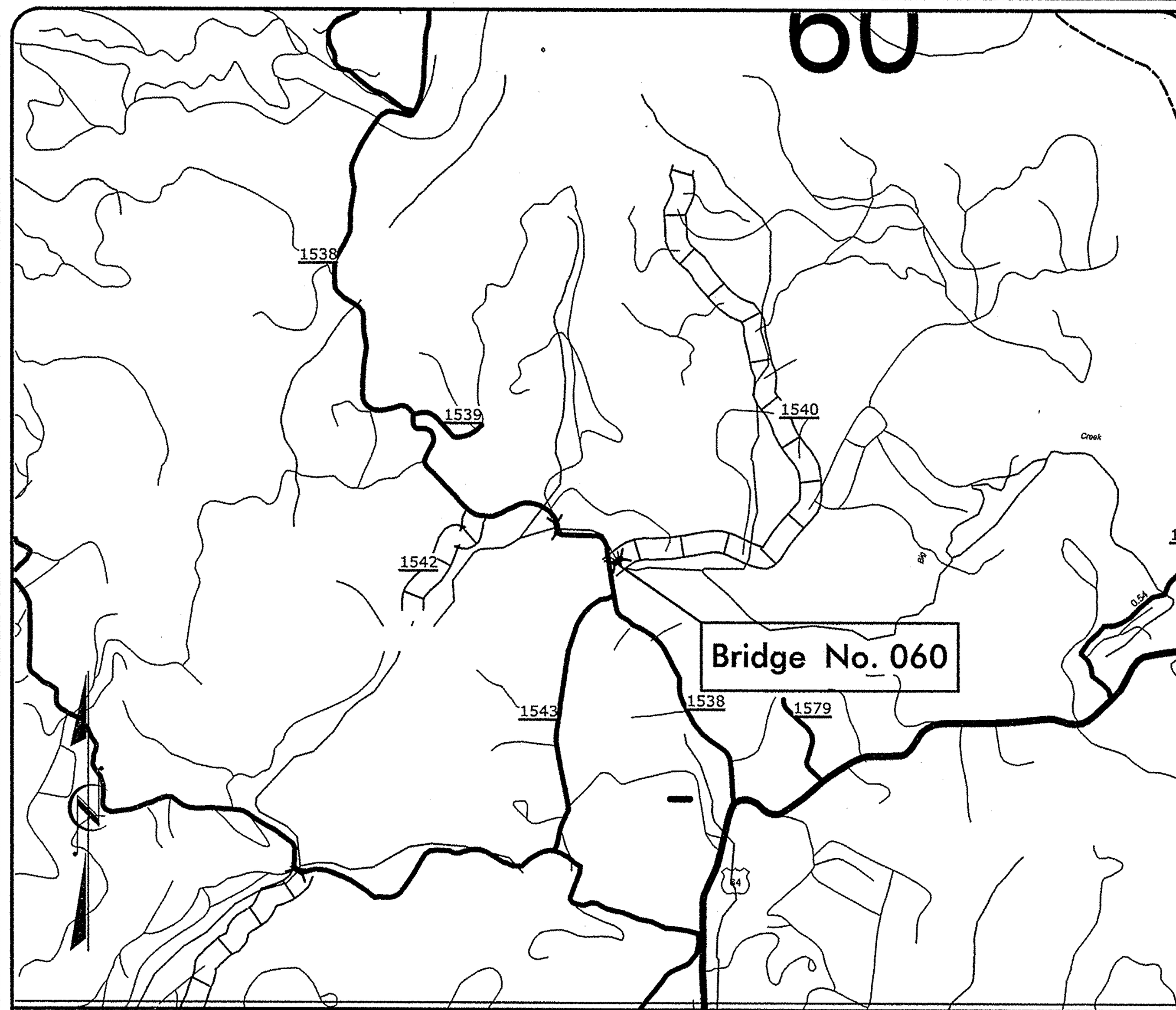


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.56	TS-0	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.56		PE, R/W, UTIL
17BP.14.R.56		CONST

TIP PROJECT: 17BP.14.R.56

CONTRACT: DN00181



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

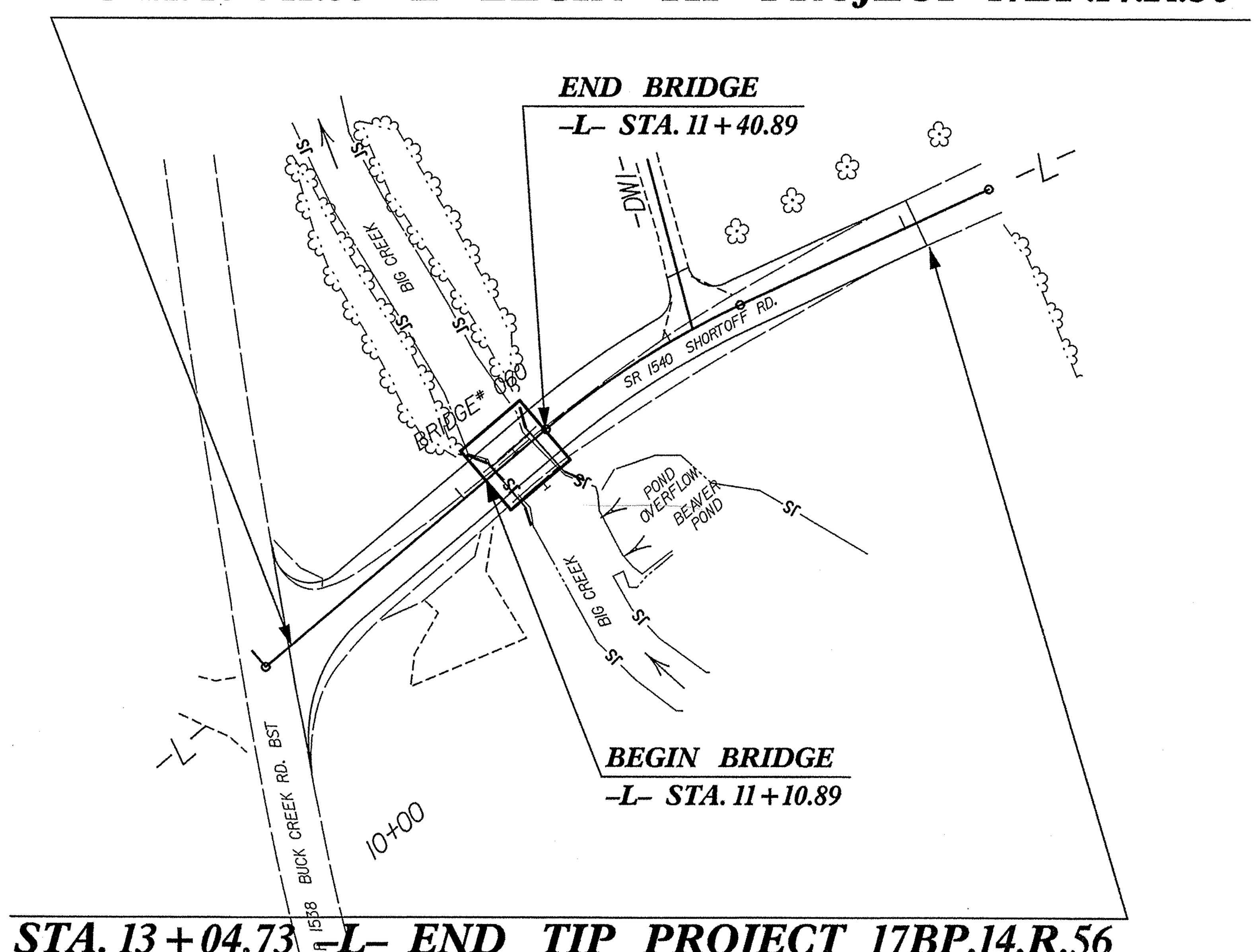
LOCATION: BRIDGE 060 OVER BIG CREEK ON SR 1540 (SHORTOFF ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

NAD 83/
NSRS 2007

STRUCTURE

STA. 10+11.55 -L- BEGIN TIP PROJECT 17BP.14.R.56



STA. 13+04.73 -L- END TIP PROJECT 17BP.14.R.56

DESIGN DATA
ADT (2006) = 910
ADT (2025) = 1820
FUNC CLASS = LOCAL SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.14.R.56	=	0.050 MI
LENGTH STRUCTURE TIP PROJECT 17BP.14.R.56	=	0.006 MI
TOTAL LENGTH TIP PROJECT 17BP.14.R.56	=	0.056 MI

NCDOT CONTACT: JOSHUA DEYTON, P.E.
PROJECT ENGINEER

Prepared In the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
FY 2013

JAMES B. VOSO, P.E.
PROJECT ENGINEER

STEVEN A. CAMPBELL, P.E.
PROJECT DESIGN ENGINEER

BRIDGE ENGINEER

SIGNATURE: P.E.

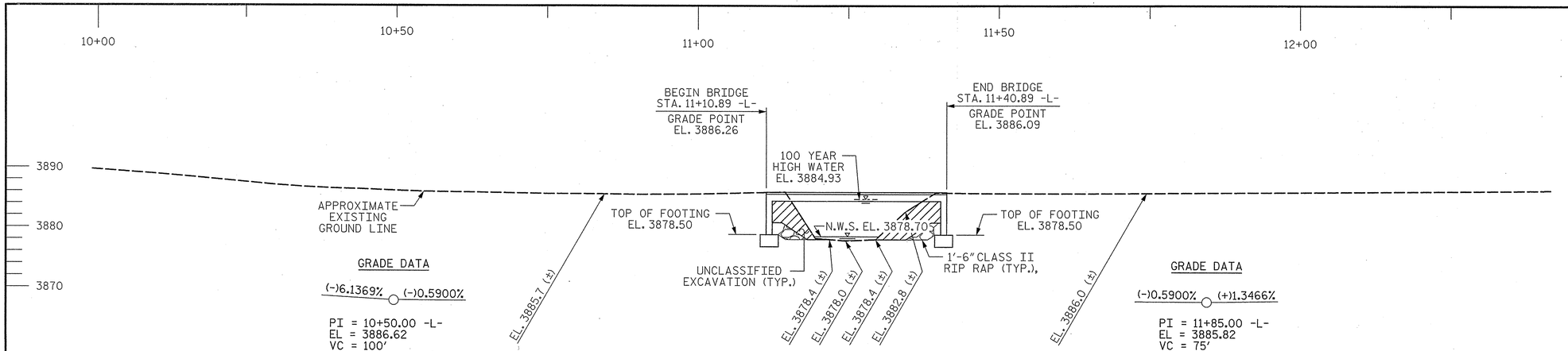
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

$$$$SYSTIME$$$$
$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

09/08/99



SECTION ALONG -L-

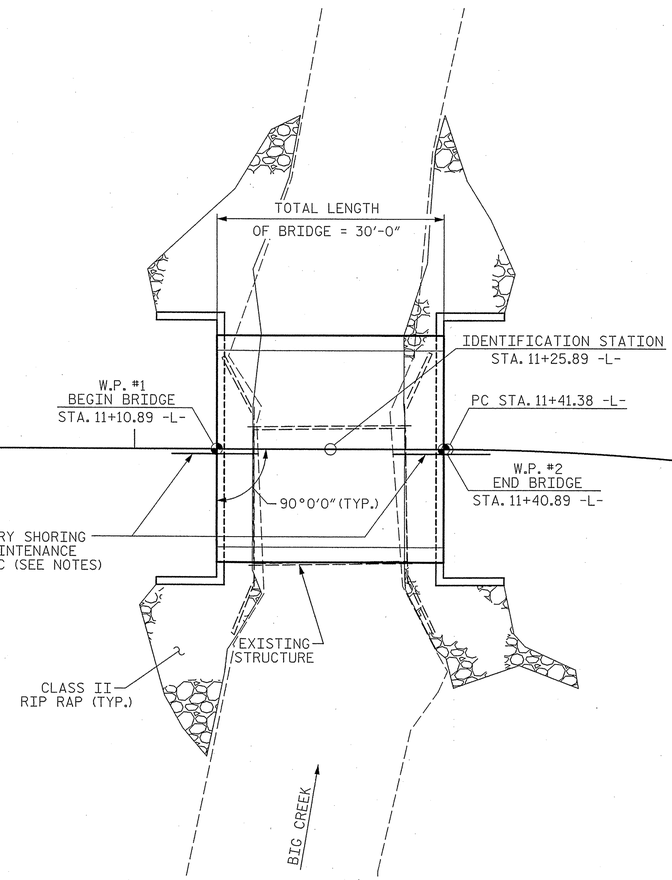
APPROXIMATE GROUND LINE ELEVATIONS ARE TAKEN ALONG THE EDGE OF BRIDGE ON UPSTREAM SIDE.

HYDRAULIC DATA

DESIGN DISCHARGE	850 CFS
FREQUENCY OF DESIGN FLOOD	25 YR.
DESIGN HIGH WATER ELEVATION	3883.70
DRAINAGE AREA	2.85 SQ. MI.
BASE DISCHARGE (Q 100)	1200 CFS
BASE HIGH WATER ELEVATION	3884.93

OVERTOPPING DATA

OVERTOPPING DISCHARGE	1400 CFS
FREQUENCY OF OVERTOPPING FLOOD	200± YR.
OVERTOPPING FLOOD ELEVATION	3885.80



PLAN

HORIZONTAL CURVE DATA -L-

PI STA 11+86.03 -L-
△= 15° 24' 32.6" (RT)
D = 17° 21' 44.5"
L = 88.75'
T = 44.64'
R = 330.00'

DRAWN BY :	PFC	DATE :	02/13
CHECKED BY :	CMT	DATE :	02/13

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 14809 ENGINEER STEVEN A. CAMPBELL

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

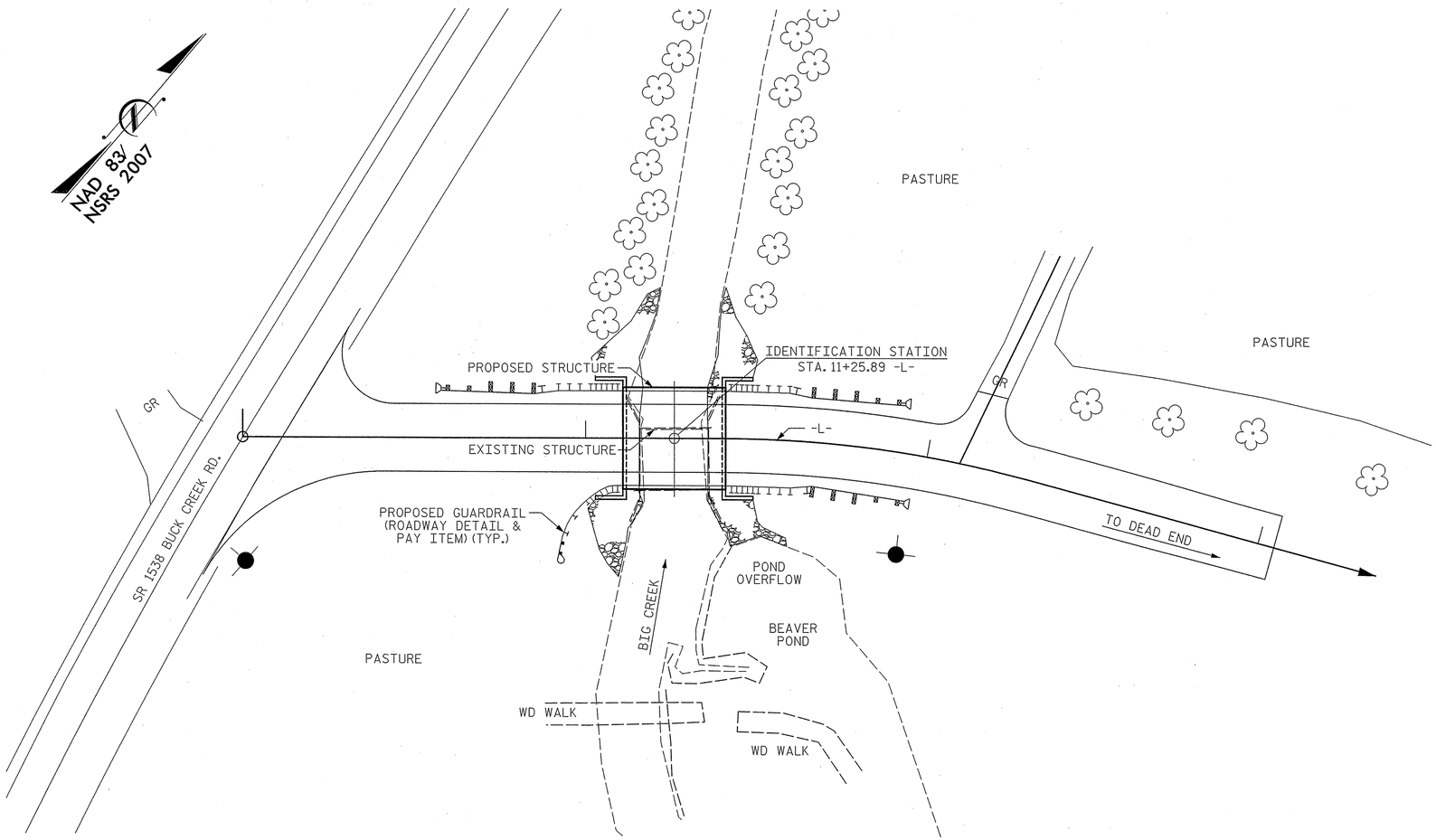
SHEET 1 OF 2 REPLACES BRIDGE NO. 60

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE ON SR 1540 OVER BIG CREEK BETWEEN SR 1538 AND DEAD END

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			7

B.M. #1: 8" SPIKE IN ROOT OF 8" WHITE OAK 37.35' LT. -L- STA. 9+99.57, EL. 3891.57



LOCATION SKETCH

NO KNOWN UTILITY CONFLICTS.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 1 AT 20'-6" SPAN, 17'-9" CLEAR ROADWAY WIDTH, TIMBER FLOOR ON I-BEAMS, ON TIMBER CAPS WITH TIMBER POSTS AND SILLS, AT EXISTING CROSSING FOR PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS NOT POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT± EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST AVAILABLE INFORMATION. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COSTS INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS AND SHOP DRAWINGS SHOWING COMPLETE DETAILS OF PRECAST CONCRETE CROWNSPAN OR EQUIVALENT, PRECAST CONCRETE WINGWALLS, AND PRECAST CONCRETE HEADWALLS. THE DRAWINGS SHALL INCLUDE PLACING DRAWINGS, REINFORCING STEEL, DETAILS OF RECESSED SEAT, AND ANCHORAGE DETAILS. DRAWINGS AND DESIGN CALCULATIONS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL. THE PRICE FOR "PRECAST CONCRETE CROWNSPAN OR EQUIVALENT", "PRECAST CONCRETE WINGWALLS", AND "PRECAST CONCRETE HEADWALLS" SHALL INCLUDE INSERTS, ANCHORAGE DEVICES, BEARING PADS/SHIMS, WATERPROOFING, TRANSPORTATION, AND ERECTING FINISHED PRODUCT.

THE MANUFACTURER OF THE PRECAST CONCRETE CROWNSPAN OR EQUIVALENT SHALL PROVIDE LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY PER NCDOT REQUIREMENTS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITIES ON ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR FOUNDATION REQUIREMENTS, SEE SHEETS S-5 AND S-6.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 11+25.89 -L-."

THE SPREAD FOOTINGS ARE DESIGNED FOR A FACTORED RESISTANCE OF 6 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 14 TSF JUST BEFORE PLACING CONCRETE.

KEY IN SPREAD FOOTINGS AT LEAST 12" INTO ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	* CLASS A CONCRETE	REINFORCING STEEL	PLAIN RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	30'X30' PRECAST CONCRETE CROWNSPAN OR EQUIVALENT	PRECAST CONCRETE WINGWALLS	PRECAST CONCRETE HEADWALLS
	LUMP SUM	LUMP SUM	CU. YDS.	LBS.	TONS	SQ. YD.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE							LUMP SUM		LUMP SUM
END BENT NO. 1		LUMP SUM	6.6	394	57	72		LUMP SUM	
END BENT NO. 2		LUMP SUM	15.8	394	49	62		LUMP SUM	
TOTAL	LUMP SUM	LUMP SUM	22.4	788	106	134	LUMP SUM	LUMP SUM	LUMP SUM

* NOTE: THE PAY ITEM "CLASS A CONCRETE" INCLUDES AN APPROXIMATE QUANTITY FOR SUBFOOTING CONCRETE BASED ON THE GEOTECHNICAL REPORT.

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

SHEET 2 OF 2 REPLACES BRIDGE NO. 60

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

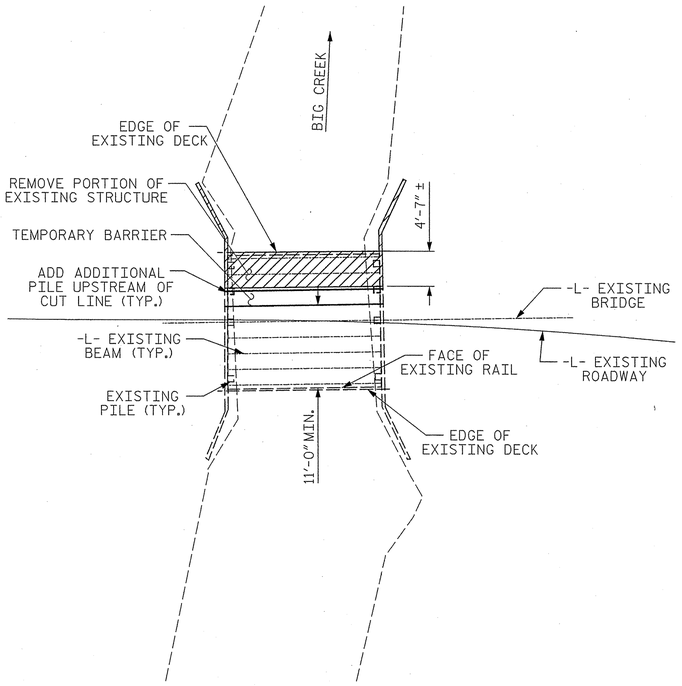
GENERAL DRAWING
FOR BRIDGE ON
SR 1540 OVER BIG CREEK
BETWEEN SR 1538 AND DEAD END

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			7

NORTH CAROLINA PROFESSIONAL SEAL 14307 ENGINEER STEVEN A. CAMPBELL

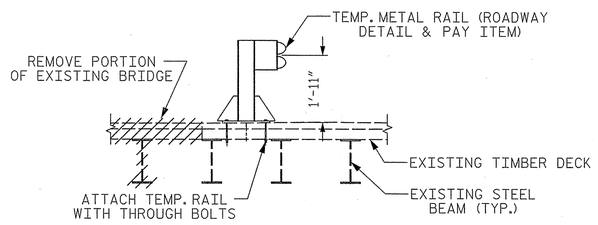
Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

DRAWN BY : PFC DATE : 02/13
CHECKED BY : CMT DATE : 02/13



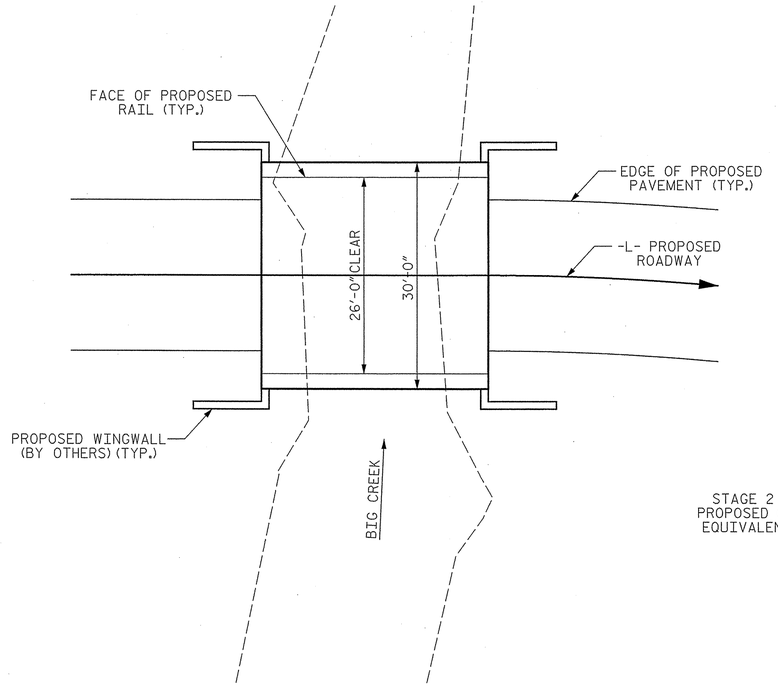
STAGE 1 CONSTRUCTION

STAGE 1 CONSTRUCTION NOTES:
1. MAINTAIN AN 11'-0" MIN. CLEAR ROADWAY
2. CONTRACTOR SHALL ADD AN ADDITIONAL TIMBER PILE AT EACH ABUTMENT AS TEMPORARY SUPPORT FOR ABUTMENT PILE CAP PRIOR TO DEMOLITION. ONLY 1 PILE SHALL BE REMOVED IN THIS PHASE. THE TIMBER PILE CAP SHALL BE CUT ON THE DOWNSTREAM SIDE OF THE ADDITIONAL TIMBER PILE.
3. THE TEMPORARY TRAFFIC BARRIER SHALL BE MOUNTED TO THE TIMBER DECK.
4. DEMOLISH THE 2 MOST DOWNSTREAM BEAMS AND APPROXIMATELY 4'-7" OF THE DECK.



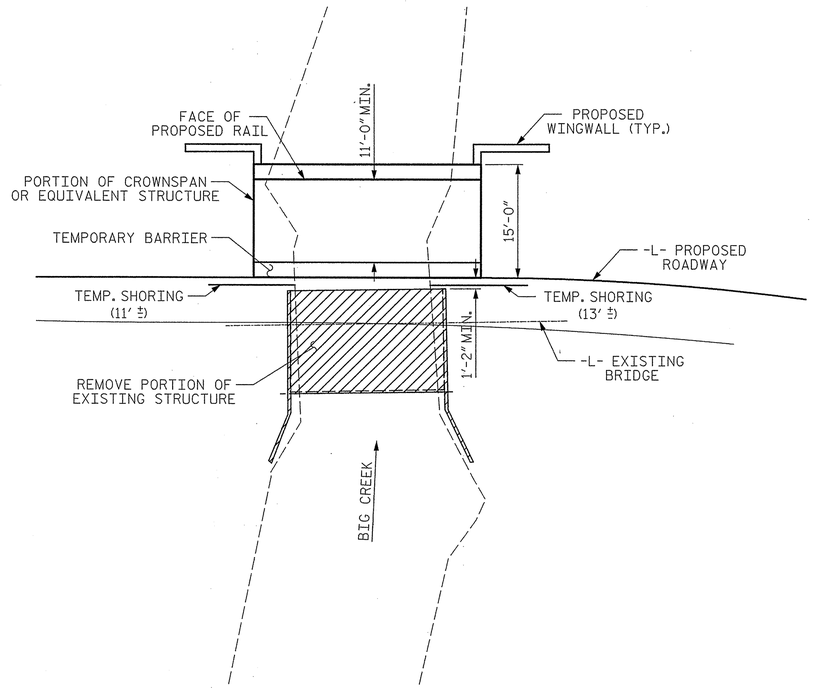
STAGE 1 TEMPORARY BARRIER

NOTE:
THE 4 - ¾"Ø THROUGH BOLTS WITH WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ¾"Ø GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.



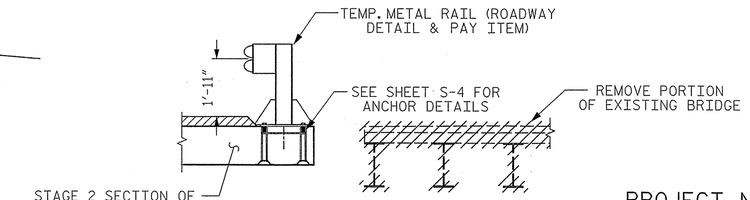
STAGE 3 CONSTRUCTION

SECTIONS OF PRECAST CONCRETE CROWNSPAN OR EQUIVALENT SHALL BE CONNECTED PER MANUFACTURER SPECIFICATIONS/RECOMMENDATIONS TO ACT AS ONE UNIT.



STAGE 2 CONSTRUCTION

STAGE 2 CONSTRUCTION NOTES:
1. MAINTAIN A MINIMUM OF 1'-2" BETWEEN THE EXISTING STRUCTURE AND THE NEW STRUCTURE.
2. PROVIDE TEMPORARY SHORING AS NECESSARY DURING STAGING.
3. MAINTAIN AN 11'-0" MIN. CLEAR ROADWAY.
4. DEMOLISH REMAINING PORTION OF EXISTING STRUCTURE.



STAGE 2 TEMPORARY BARRIER

PROJECT NO. 17BP.14.R.56
MACON COUNTY
STATION: 11+25.89 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

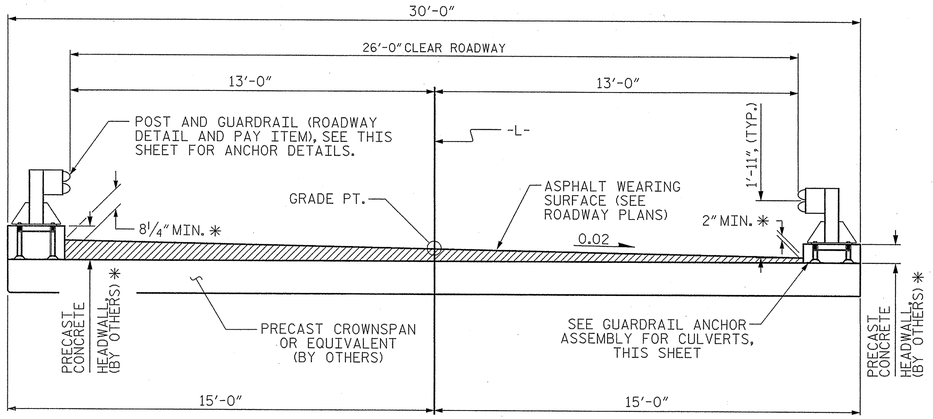
STAGED CONSTRUCTION FOR BRIDGE 060

NORTH CAROLINA PROFESSIONAL SEAL 14300 ENGINEER STEVEN A. CAMPBELL

ASSEMBLED BY :	PFC	DATE : 02/13
CHECKED BY :	CMT	DATE : 02/13

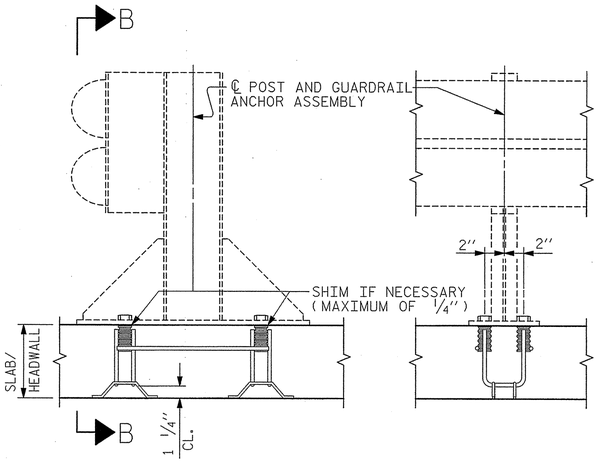
Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			7



TYPICAL SECTION

* - THE ASPHALT ON THE DOWNSTREAM SIDE VARIES FROM 10 1/4" AT END BENT NO. 1 TO 8 1/4" AT END BENT NO. 2. THE ASPHALT ON THE UPSTREAM SIDE VARIES FROM 4" AT END BENT NO. 1 TO 2" AT END BENT NO. 2. SIMILARLY THE HEADWALL ON THE DOWNSTREAM SIDE VARIES FROM 1'-4" AT END BENT NO. 1 TO 1'-2" AT END BENT NO. 2. THE HEADWALL ON THE UPSTREAM SIDE VARIES FROM 10" AT END BENT NO. 1 TO 8" AT END BENT NO. 2.



SECTION A-A

SECTION B-B

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".

B. 4 - 1" Ø X 2 1/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR PRECAST CONCRETE CROWNSPAN OR EQUIVALENT.

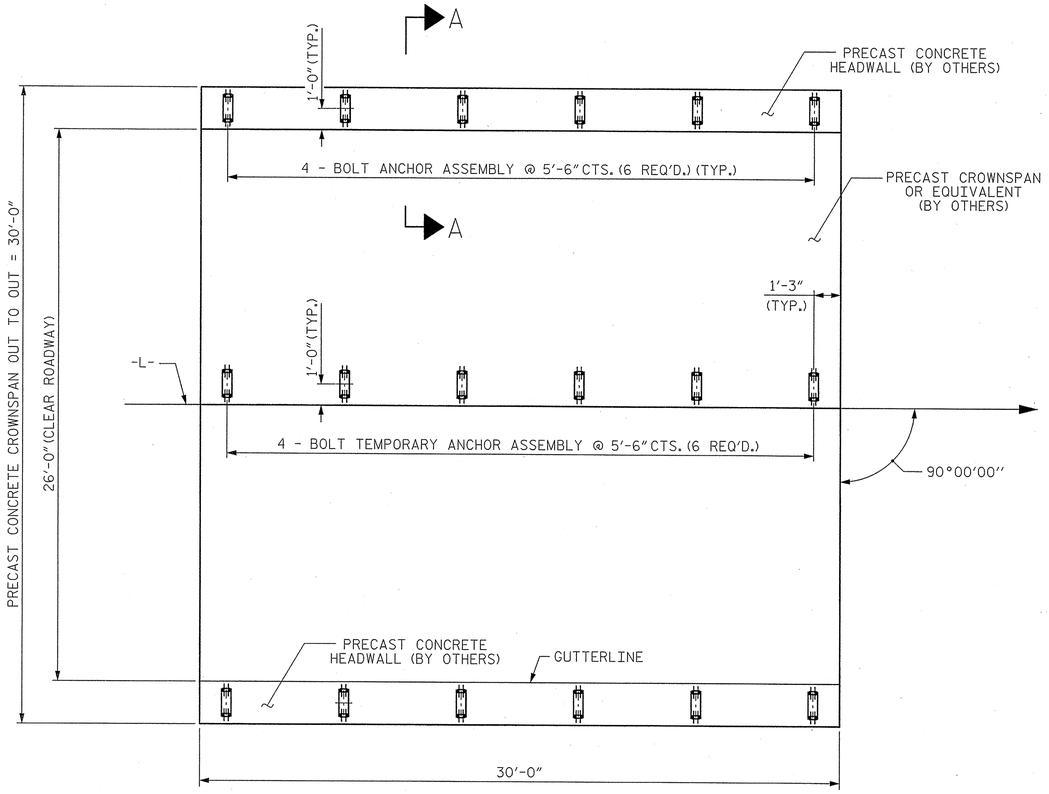
FERRULES TO BE PLUGGED DURING POURING OF HEADWALLS AS RECOMMENDED BY THE MANUFACTURER.

AT THE PRECASTER'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

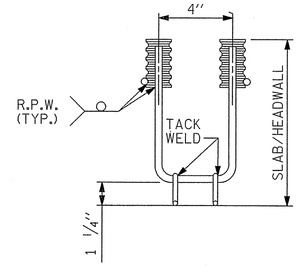
THE CONTRACTOR AND/OR PRECASTER MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1"Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.



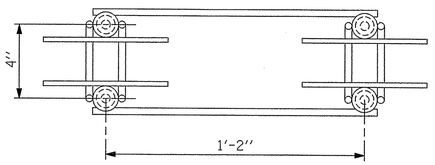
PLAN

SHOWING : GUARDRAIL ANCHOR ASSEMBLY SPACING.

SIDE VIEW



ELEVATION



PLAN

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

ASSEMBLED BY :	PFC	DATE :	02/13
CHECKED BY :	CMT	DATE :	02/13
DRAWN BY : FCJ	6/88	REV. 7/10/01	LES/RDR
CHECKED BY : ARB	6/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06R	KMM/GM

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 14302 ENGINEER STEVEN A. CAMPBELL
6/24/13

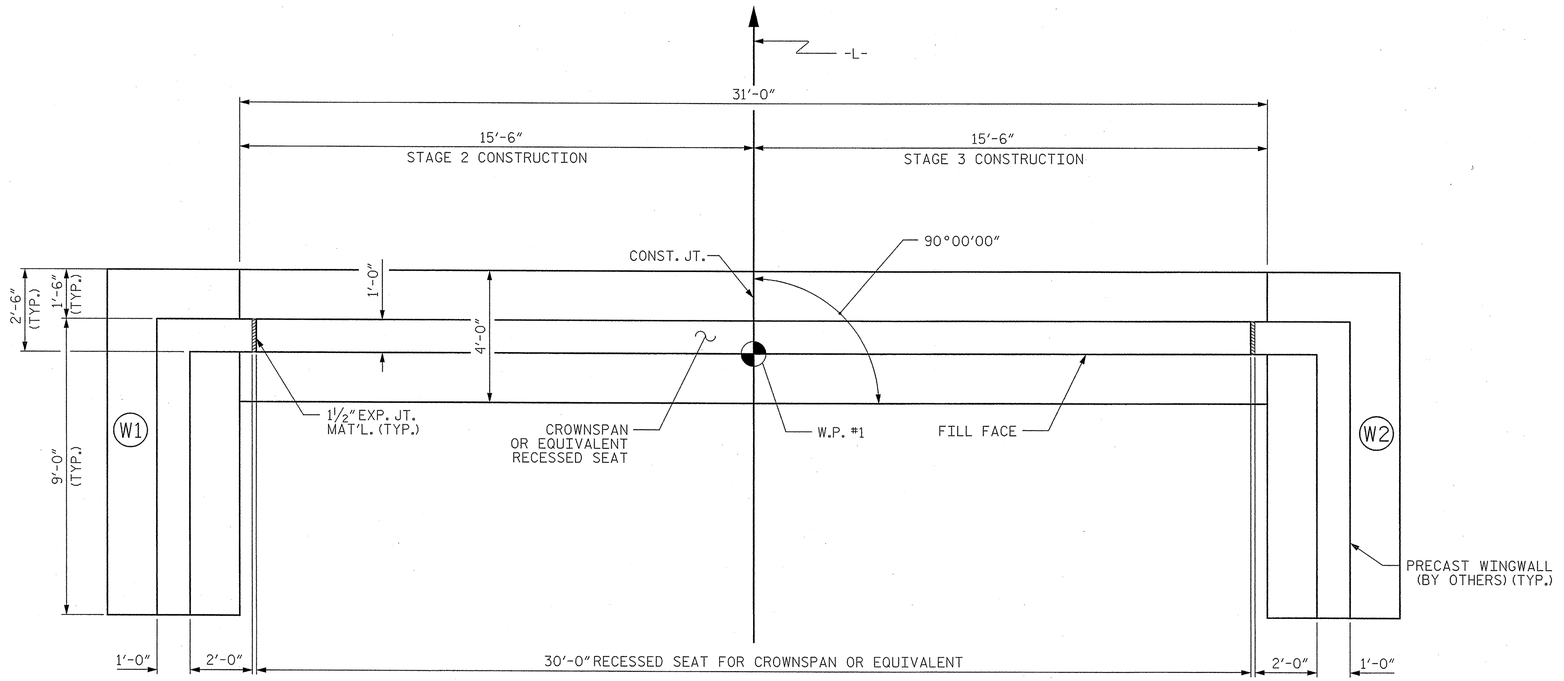
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ANCHORAGE DETAILS FOR GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS AND TRANSVERSE SECTION

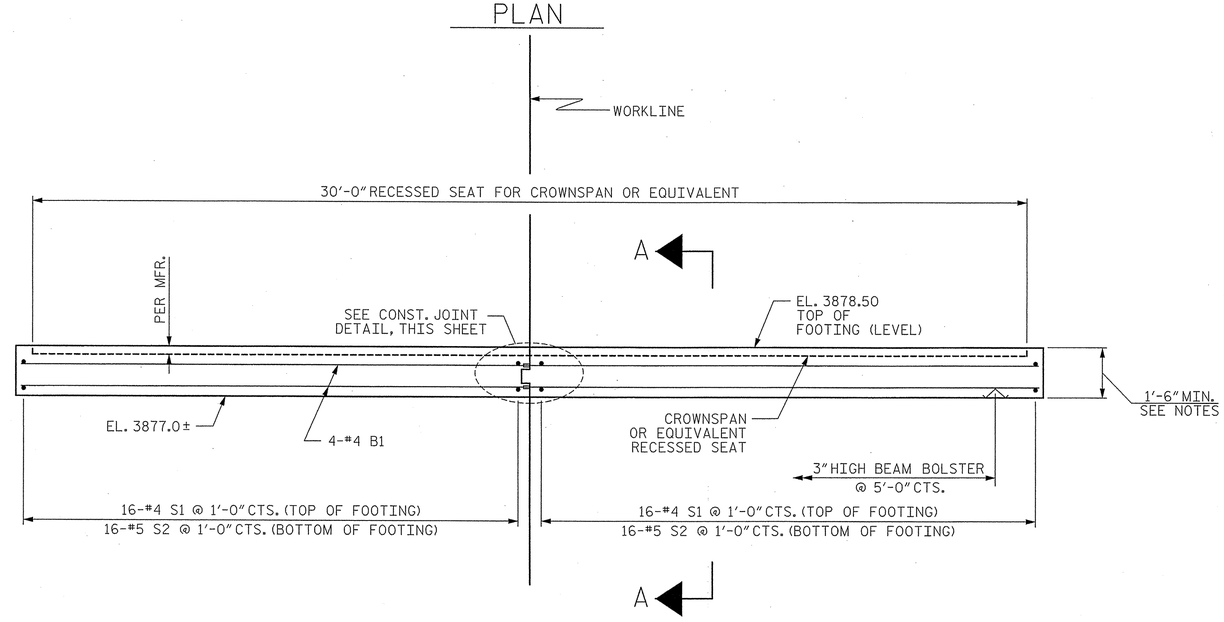
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			7

STD. NO. GRA1

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



PLAN



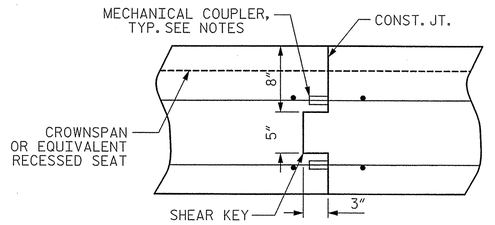
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 of 3.

NOTES

B2 BARS PLACED DURING CONSTRUCTION STAGE 2 SHALL HAVE MECHANICAL COUPLERS CAPABLE OF DEVELOPING 125% OF THE STRENGTH OF THE SPLICED BARS. THE CONTRACTOR SHALL SUBMIT SAMPLES OF HIS PROPOSED SPLICE SYSTEM TO THE ENGINEER FOR REVIEW AND APPROVAL. WELDED SPLICES MAY NOT BE SUBSTITUTED FOR MECHANICAL COUPLERS. THE COST OF MECHANICAL COUPLERS SHALL BE INCLUDED IN THE BID PRICE FOR REINFORCING STEEL. THE CONTRACTOR SHALL COORDINATE BAR LENGTH REQUIREMENTS FOR THE SPLICE SYSTEM USED WITH REINFORCING STEEL.

THE FOOTING SHALL BEAR ON BEDROCK HAVING AN ALLOWABLE BEARING PRESSURE OF 6 TSF OR GREATER. KEY FOOTING INTO ROCK A MINIMUM OF 1'-0". ADDITION OF UNREINFORCED SUBFOOTING CONCRETE MAY BE REQUIRED TO ACHIEVE THE FOOTING ELEVATIONS SHOWN. IF REQUIRED, SUBFOOTING CONRETE SHALL BE CLASS A AND THE COST SHALL BE INCLUDED IN THE BID ITEM FOR CLASS A CONCRETE. THE FOOTING ELEVATIONS SHOWN ARE BASED ON THE APPROXIMATE ELEVATION OF BEDROCK PROVIDED BY THE GEOTECHNICAL ENGINEER. DUE TO INCONSISTANCIES IN THE BEDROCK, OVER EXCAVATION MAY BE NECESSARY TO ACHIEVE THE REQUIRED FOOTING THICKNESS.



CONSTRUCTION JOINT DETAIL

PROJECT NO. 17BP.14.R.56
MACON COUNTY
STATION: 11+25.89 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

FOOTING No. 1

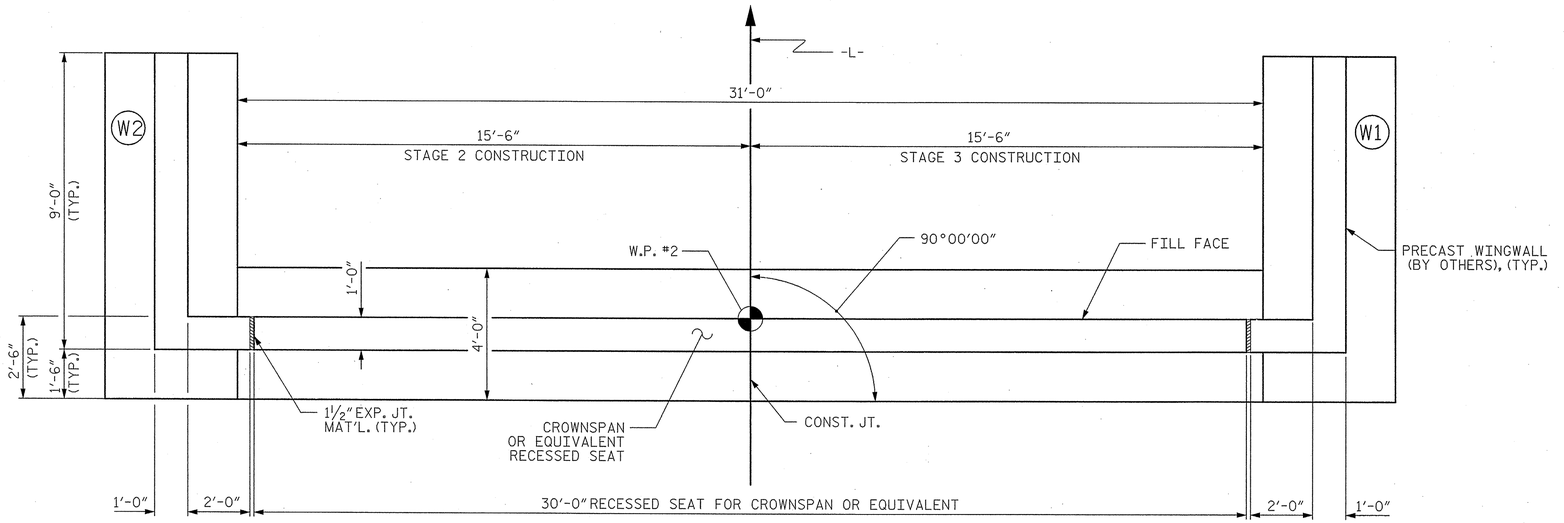
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			7

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

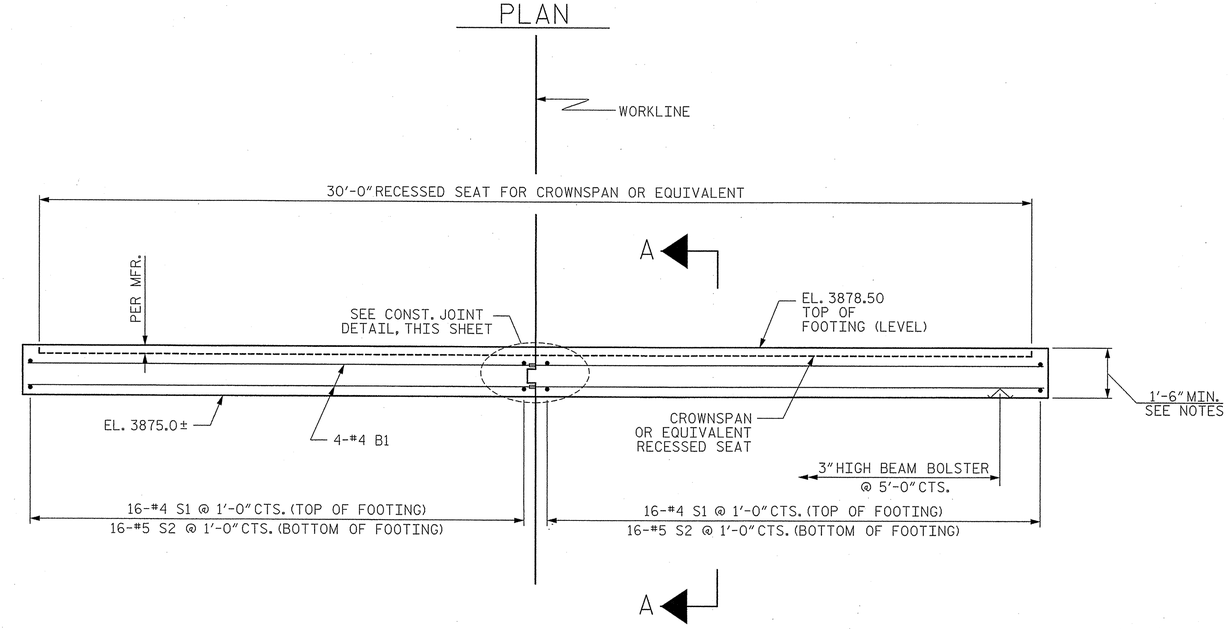
NORTH CAROLINA PROFESSIONAL SEAL 14304 ENGINEER STEVEN A. CAMPBELL

ASSEMBLED BY : PFC DATE : 02/13
CHECKED BY : CMT DATE : 02/13

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



PLAN



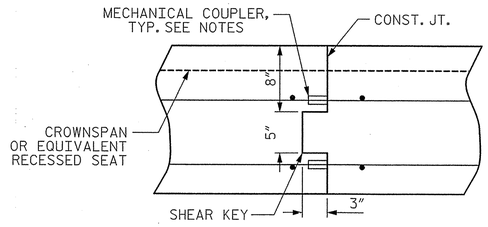
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.

NOTES

B2 BARS PLACED DURING CONSTRUCTION STAGE 2 SHALL HAVE MECHANICAL COUPLERS CAPABLE OF DEVELOPING 125% OF THE STRENGTH OF THE SPLICED BARS. THE CONTRACTOR SHALL SUBMIT SAMPLES OF HIS PROPOSED SPLICE SYSTEM TO THE ENGINEER FOR REVIEW AND APPROVAL. WELDED SPLICES MAY NOT BE SUBSTITUTED FOR MECHANICAL COUPLERS. THE COST OF MECHANICAL COUPLERS SHALL BE INCLUDED IN THE BID PRICE FOR REINFORCING STEEL. THE CONTRACTOR SHALL COORDINATE BAR LENGTH REQUIREMENTS FOR THE SPLICE SYSTEM USED WITH REINFORCING STEEL.

THE FOOTING SHALL BEAR ON BEDROCK HAVING AN ALLOWABLE BEARING PRESSURE OF 6 TSF OR GREATER. KEY FOOTING INTO ROCK A MINIMUM OF 1'-0". ADDITION OF UNREINFORCED SUBFOOTING CONCRETE MAY BE REQUIRED TO ACHIEVE THE FOOTING ELEVATIONS SHOWN. IF REQUIRED, SUBFOOTING CONRETE SHALL BE CLASS A AND THE COST SHALL BE INCLUDED IN THE BID ITEM FOR CLASS A CONCRETE. THE FOOTING ELEVATIONS SHOWN ARE BASED ON THE APPROXIMATE ELEVATION OF BEDROCK PROVIDED BY THE GEOTECHNICAL ENGINEER. DUE TO INCONSISTANCIES IN THE BEDROCK, OVER EXCAVATION MAY BE NECESSARY TO ACHIEVE THE REQUIRED FOOTING THICKNESS.



CONSTRUCTION JOINT DETAIL

PROJECT NO. 17BP.14.R.56
MACON COUNTY
STATION: 11+25.89 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

FOOTING No. 2

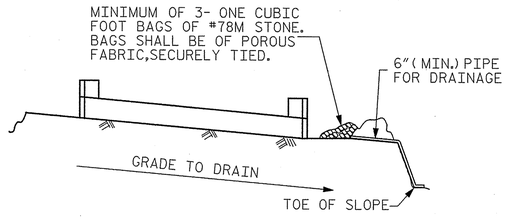
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			7

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 14309 ENGINEER STEVEN A. CAMPBELL

ASSEMBLED BY : PFC DATE : 02/13
CHECKED BY : CMT DATE : 02/13

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

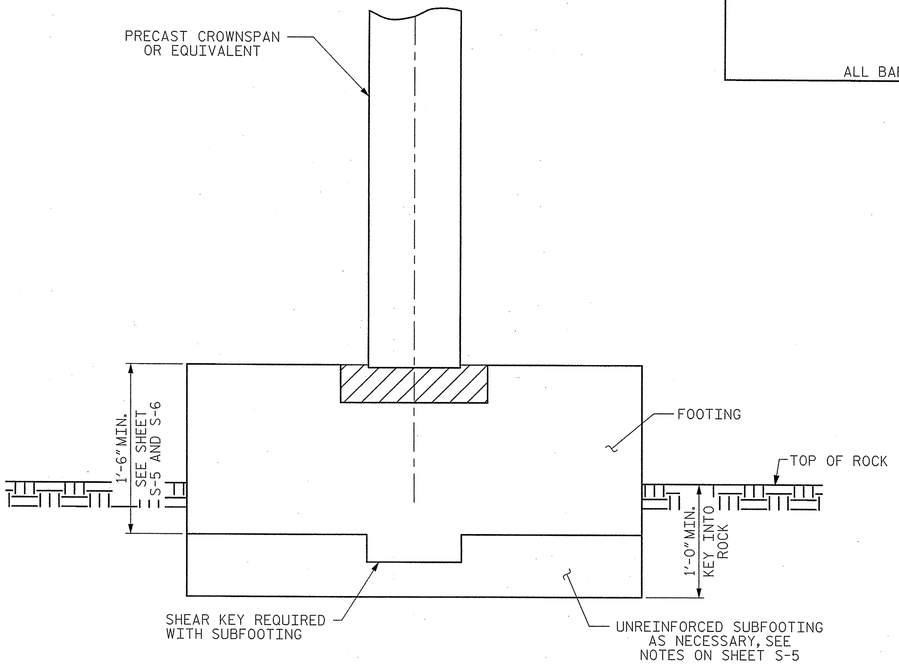


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

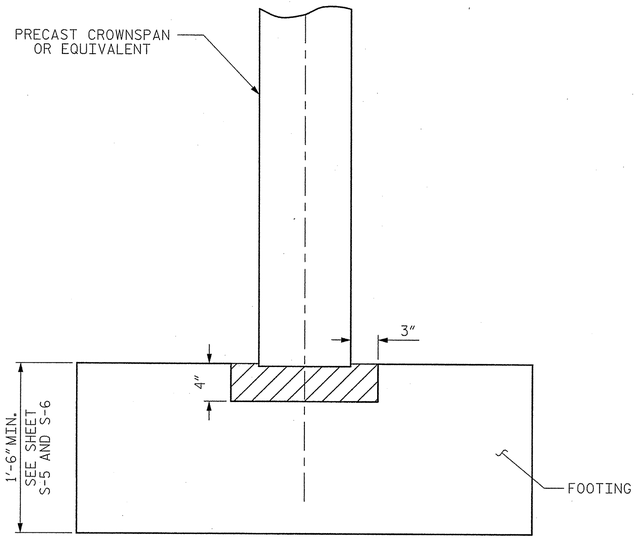
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

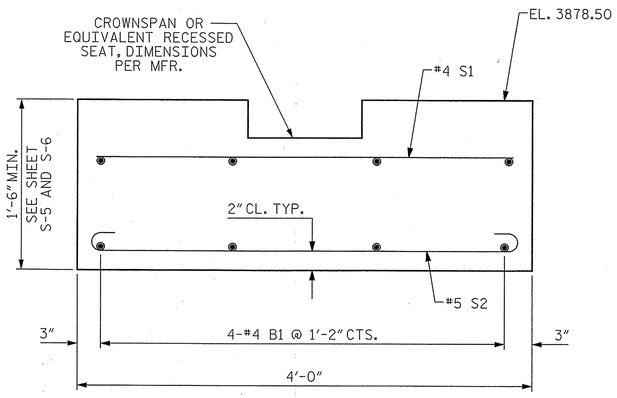
TEMPORARY DRAINAGE AT END BENT



KEYED FOOTING DETAIL

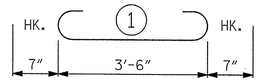


KEYWAY DETAIL



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4	STR	15'-3"	163
S1	32	#4	STR	3'-6"	75
S2	32	#5	1	4'-8"	156

REINFORCING STEEL (FOR ONE END BENT) 394 LBS.

CLASS A CONCRETE BREAKDOWN FOR END BENT NO. 1

POUR #1	SUBFOOTING	0.0 C.Y.
POUR #2	FOOTING	6.6 C.Y.
TOTAL CLASS A CONCRETE FOR END BENT NO. 1		6.6 C.Y.

CLASS A CONCRETE BREAKDOWN FOR END BENT NO. 2

POUR #1	SUBFOOTING	9.2 C.Y.
POUR #2	FOOTING	6.6 C.Y.
TOTAL CLASS A CONCRETE FOR END BENT NO. 1		15.8 C.Y.

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

FOOTING No. 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			7

NORTH CAROLINA PROFESSIONAL SEAL 14209 ENGINEER STEVEN A. CAMPBELL

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

ASSEMBLED BY : PFC DATE : 02/13
CHECKED BY : CMT DATE : 02/13

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM

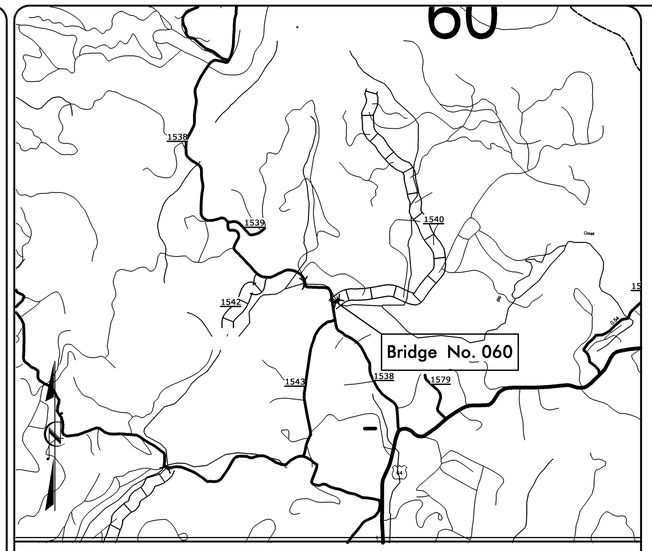
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

09/08/99

TIP PROJECT: 17BP.14.R.56

CONTRACT: DN00181

$$$$USERNAME$$$$
$$$$SYSTIME$$$$



VICINITY MAP

STRUCTURE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.56	TS–0	

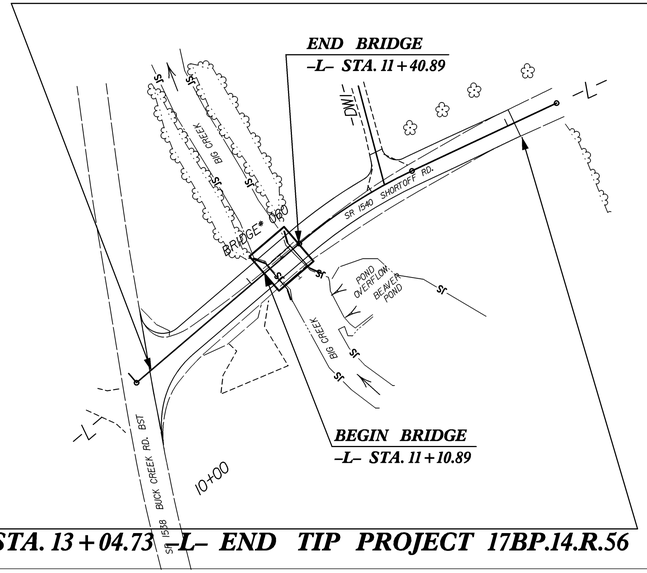
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.56		PE, R/W, UTIL
17BP.14.R.56		CONST

LOCATION: BRIDGE 060 OVER BIG CREEK ON SR 1540 (SHORTOFF ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

NAD 83/
NSRS 2007

STA. 10+11.55 –L– BEGIN TIP PROJECT 17BP.14.R.56



STA. 13+04.73 –L– END TIP PROJECT 17BP.14.R.56

DESIGN DATA

ADT (2006) = 910
ADT (2025) = 1820

FUNC CLASS = LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.14.R.56	=	*0.050 MI*
LENGTH STRUCTURE TIP PROJECT 17BP.14.R.56	=	*0.006 MI*
TOTAL LENGTH TIP PROJECT 17BP.14.R.56	=	*0.056 MI*

NCDOT CONTACT: JOSHUA DEYTON, P.E.
PROJECT ENGINEER

Prepared In the Office of:
Mattern & Craig
CONSULTING ENGINEERS – SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 – FAX (828) 254-4562

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 22, 2013

LETTING DATE: FEBRUARY 25, 2014

JAMES B. VOSO, P.E.
PROJECT ENGINEER

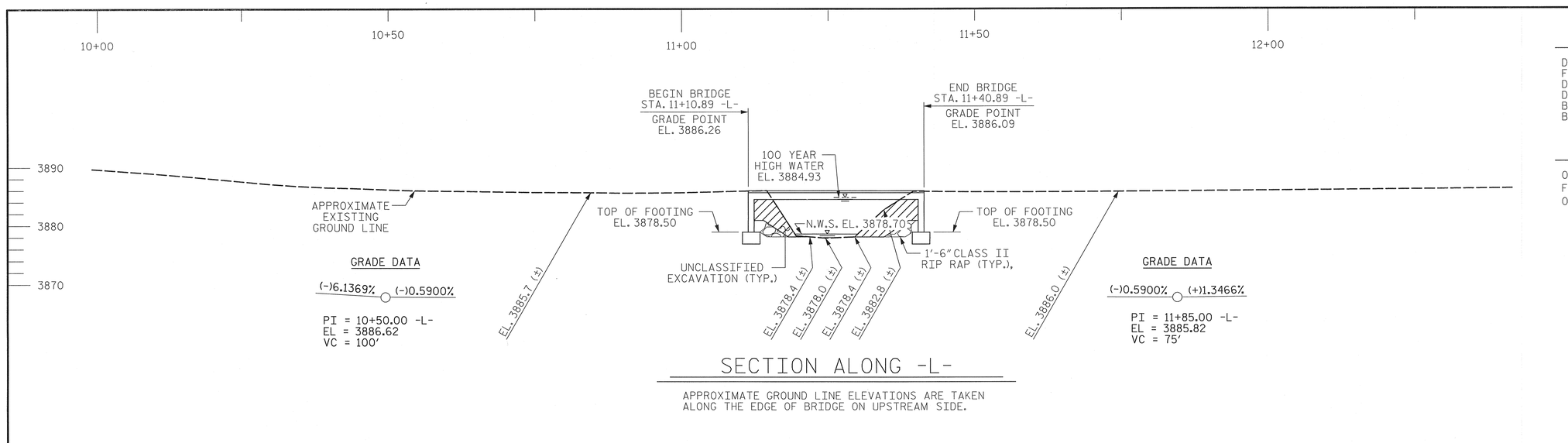
STEVEN A. CAMPBELL, P.E.
PROJECT DESIGN ENGINEER

BRIDGE ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER



SECTION ALONG -L-

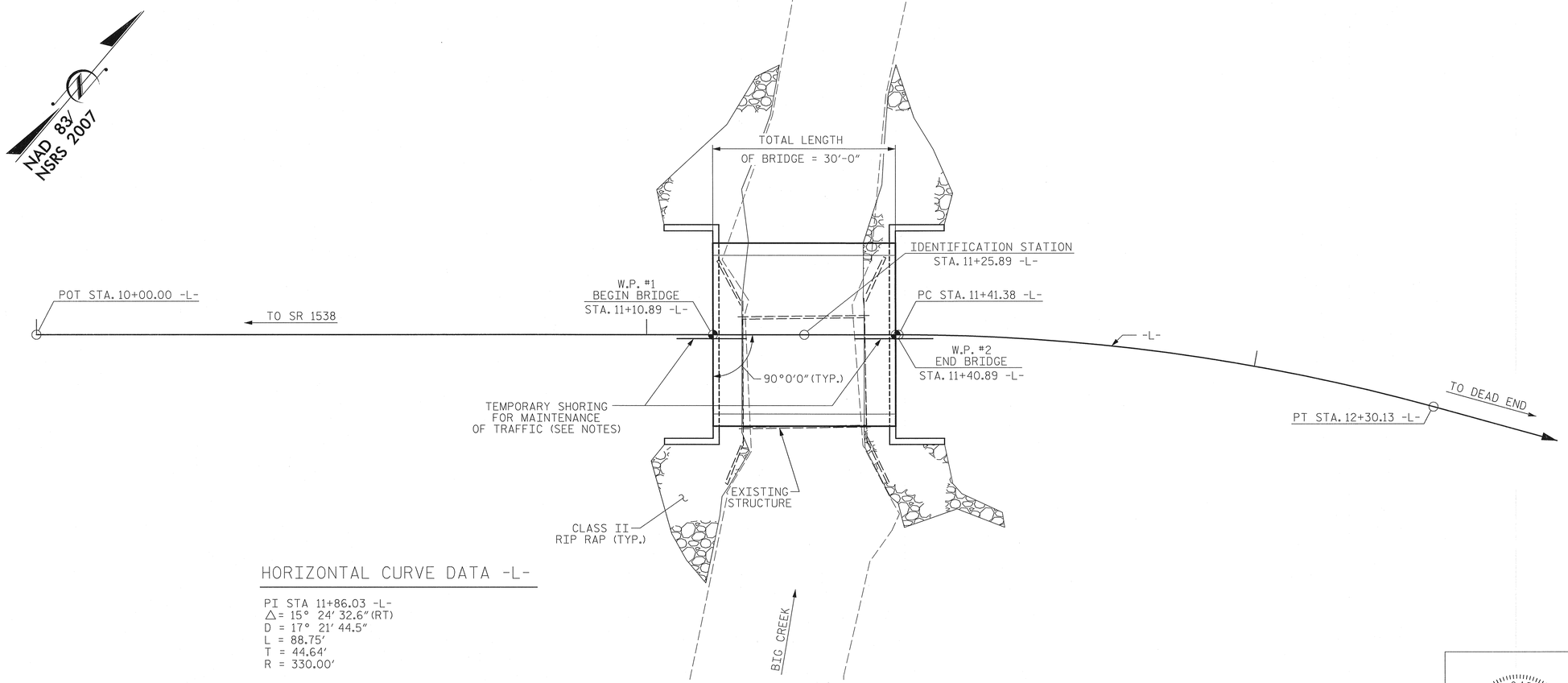
APPROXIMATE GROUND LINE ELEVATIONS ARE TAKEN ALONG THE EDGE OF BRIDGE ON UPSTREAM SIDE.

HYDRAULIC DATA

DESIGN DISCHARGE	850 CFS
FREQUENCY OF DESIGN FLOOD	25 YR.
DESIGN HIGH WATER ELEVATION	3883.70
DRAINAGE AREA	2.85 SQ. MI.
BASE DISCHARGE (Q 100)	1200 CFS
BASE HIGH WATER ELEVATION	3884.93

OVERTOPPING DATA

OVERTOPPING DISCHARGE	1400 CFS
FREQUENCY OF OVERTOPPING FLOOD	200± YR.
OVERTOPPING FLOOD ELEVATION	3885.80



PLAN

HORIZONTAL CURVE DATA -L-

PI STA 11+86.03 -L-
△= 15° 24' 32.6"(RT)
D = 17° 21' 44.5"
L = 88.75'
T = 44.64'
R = 330.00'

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 60

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE ON SR 1540 OVER BIG CREEK BETWEEN SR 1538 AND DEAD END

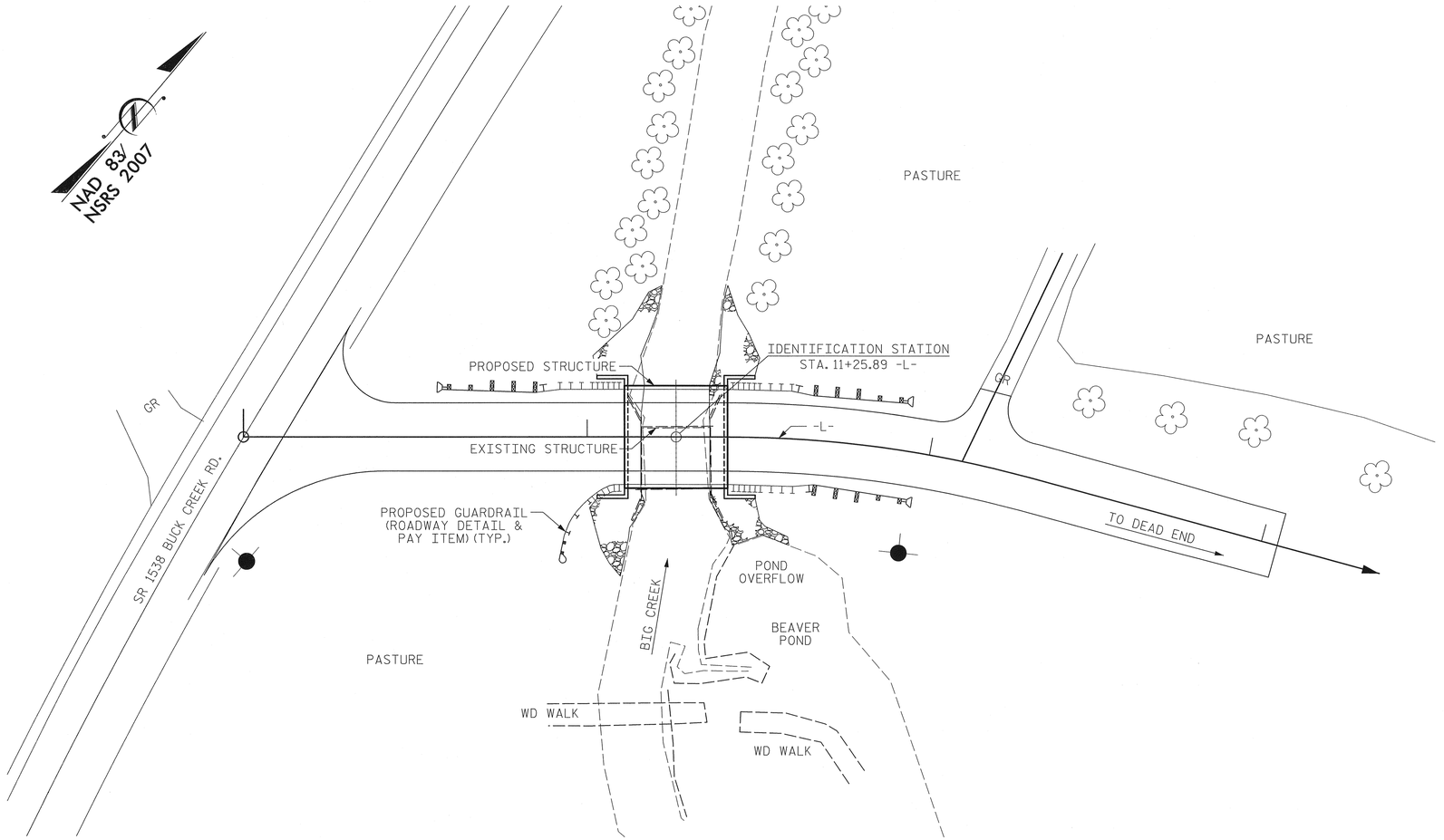
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			7

NORTH CAROLINA PROFESSIONAL SEAL 14309 ENGINEER STEVEN A. CAMPBELL
6/27/13

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

DRAWN BY :	PFC	DATE :	02/13
CHECKED BY :	CMT	DATE :	02/13

B.M. #1: 8" SPIKE IN ROOT OF 8" WHITE OAK 37.35' LT. -L- STA. 9+99.57, EL. 3891.57



LOCATION SKETCH

NO KNOWN UTILITY CONFLICTS.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 1 AT 20'-6" SPAN, 17'-9" CLEAR ROADWAY WIDTH, TIMBER FLOOR ON I-BEAMS, ON TIMBER CAPS WITH TIMBER POSTS AND SILLS, AT EXISTING CROSSING FOR PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS NOT POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT± EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST AVAILABLE INFORMATION. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COSTS INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS AND SHOP DRAWINGS SHOWING COMPLETE DETAILS OF PRECAST CONCRETE CROWNSPAN OR EQUIVALENT, PRECAST CONCRETE WINGWALLS, AND PRECAST CONCRETE HEADWALLS. THE DRAWINGS SHALL INCLUDE PLACING DRAWINGS, REINFORCING STEEL, DETAILS OF RECESSED SEAT, AND ANCHORAGE DETAILS. DRAWINGS AND DESIGN CALCULATIONS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, SHALL BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL. THE PRICE FOR "PRECAST CONCRETE CROWNSPAN OR EQUIVALENT", "PRECAST CONCRETE WINGWALLS", AND "PRECAST CONCRETE HEADWALLS" SHALL INCLUDE INSERTS, ANCHORAGE DEVICES, BEARING PADS/SHIMS, WATERPROOFING, TRANSPORTATION, AND ERECTING FINISHED PRODUCT.

THE MANUFACTURER OF THE PRECAST CONCRETE CROWNSPAN OR EQUIVALENT SHALL PROVIDE LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY PER NCDOT REQUIREMENTS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITIES ON ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR FOUNDATION REQUIREMENTS, SEE SHEETS S-5 AND S-6.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 11+25.89 -L-."

THE SPREAD FOOTINGS ARE DESIGNED FOR A FACTORED RESISTANCE OF 6 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 14 TSF JUST BEFORE PLACING CONCRETE.

KEY IN SPREAD FOOTINGS AT LEAST 12" INTO ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	* CLASS A CONCRETE	REINFORCING STEEL	PLAIN RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	30'X30' PRECAST CONCRETE CROWNSPAN OR EQUIVALENT	PRECAST CONCRETE WINGWALLS	PRECAST CONCRETE HEADWALLS
	LUMP SUM	LUMP SUM	CU. YDS.	LBS.	TONS	SQ. YD.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE							LUMP SUM		LUMP SUM
END BENT NO. 1		LUMP SUM	6.6	394	57	72		LUMP SUM	
END BENT NO. 2		LUMP SUM	15.8	394	49	62		LUMP SUM	
TOTAL	LUMP SUM	LUMP SUM	22.4	788	106	134	LUMP SUM	LUMP SUM	LUMP SUM

* NOTE: THE PAY ITEM "CLASS A CONCRETE" INCLUDES AN APPROXIMATE QUANTITY FOR SUBFOOTING CONCRETE BASED ON THE GEOTECHNICAL REPORT.

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

SHEET 2 OF 2 REPLACES BRIDGE NO. 60

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

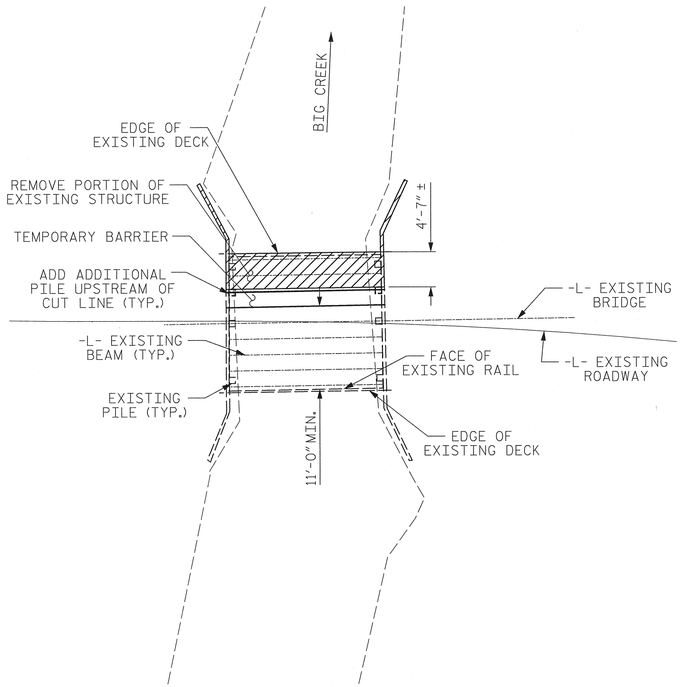
GENERAL DRAWING FOR BRIDGE ON SR 1540 OVER BIG CREEK BETWEEN SR 1538 AND DEAD END

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			7

NORTH CAROLINA PROFESSIONAL SEAL 14390 ENGINEER STEVEN A. CAMPBELL 6/28/13

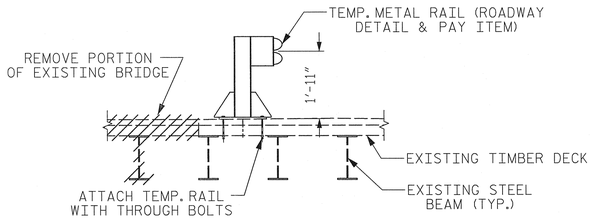
Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

DRAWN BY :	PFC	DATE :	02/13
CHECKED BY :	CMT	DATE :	02/13



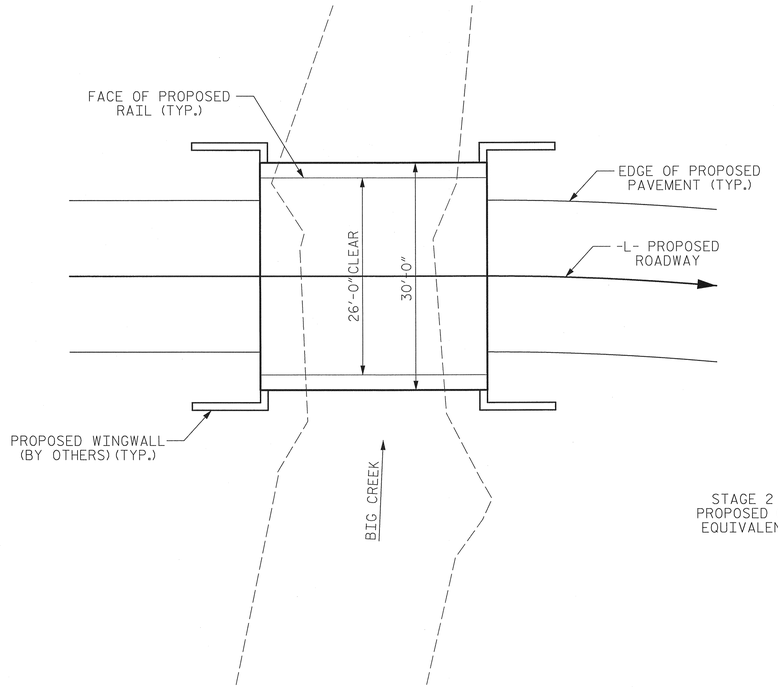
STAGE 1 CONSTRUCTION

STAGE 1 CONSTRUCTION NOTES:
1. MAINTAIN AN 11'-0" MIN. CLEAR ROADWAY
2. CONTRACTOR SHALL ADD AN ADDITIONAL TIMBER PILE AT EACH ABUTMENT AS TEMPORARY SUPPORT FOR ABUTMENT PILE CAP PRIOR TO DEMOLITION. ONLY 1 PILE SHALL BE REMOVED IN THIS PHASE. THE TIMBER PILE CAP SHALL BE CUT ON THE DOWNSTREAM SIDE OF THE ADDITIONAL TIMBER PILE.
3. THE TEMPORARY TRAFFIC BARRIER SHALL BE MOUNTED TO THE TIMBER DECK.
4. DEMOLISH THE 2 MOST DOWNSTREAM BEAMS AND APPROXIMATELY 4'-7" OF THE DECK.



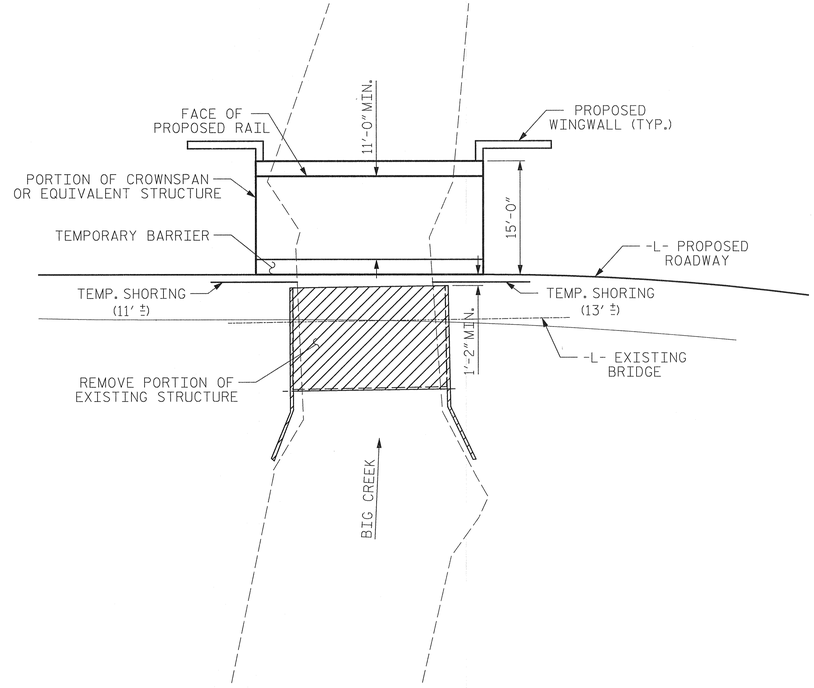
STAGE 1 TEMPORARY BARRIER

NOTE:
THE 4 - ¾"Ø THROUGH BOLTS WITH WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ¾"Ø GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.



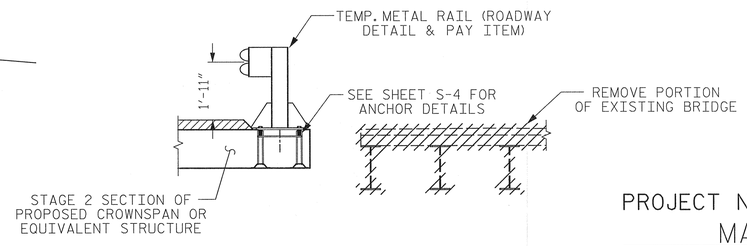
STAGE 3 CONSTRUCTION

SECTIONS OF PRECAST CONCRETE CROWNSPAN OR EQUIVALENT SHALL BE CONNECTED PER MANUFACTURER SPECIFICATIONS/RECOMMENDATIONS TO ACT AS ONE UNIT.



STAGE 2 CONSTRUCTION

STAGE 2 CONSTRUCTION NOTES:
1. MAINTAIN A MINIMUM OF 1'-2" BETWEEN THE EXISTING STRUCTURE AND THE NEW STRUCTURE.
2. PROVIDE TEMPORARY SHORING AS NECESSARY DURING STAGING.
3. MAINTAIN AN 11'-0" MIN. CLEAR ROADWAY.
4. DEMOLISH REMAINING PORTION OF EXISTING STRUCTURE.



STAGE 2 TEMPORARY BARRIER

PROJECT NO. 17BP.14.R.56
MACON COUNTY
STATION: 11+25.89 -L-

ASSEMBLED BY :	PFC	DATE : 02/13
CHECKED BY :	CMT	DATE : 02/13

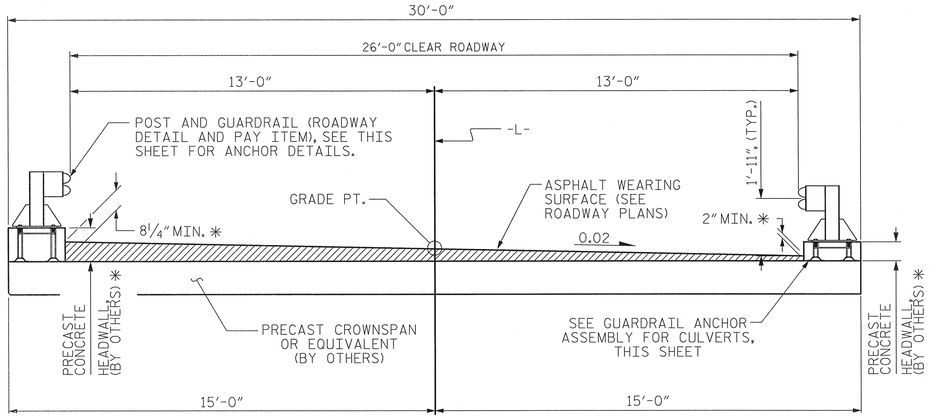
Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 14309 ENGINEER STEVEN A. CAMPBELL

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

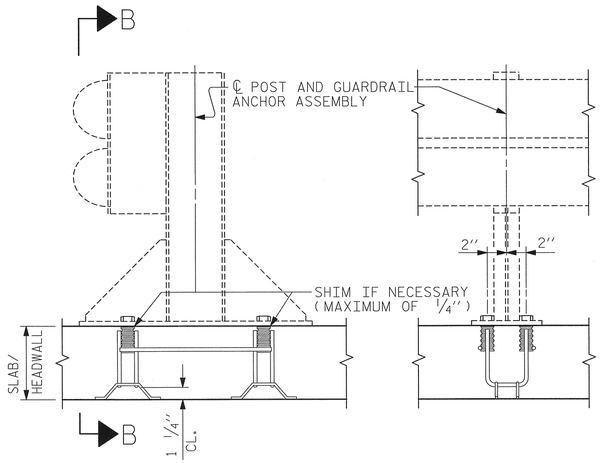
STAGED CONSTRUCTION FOR BRIDGE 060

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			7



TYPICAL SECTION

* - THE ASPHALT ON THE DOWNSTREAM SIDE VARIES FROM 10 1/4" AT END BENT NO. 1 TO 8 1/4" AT END BENT NO. 2. THE ASPHALT ON THE UPSTREAM SIDE VARIES FROM 4" AT END BENT NO. 1 TO 2" AT END BENT NO. 2. SIMILARLY THE HEADWALL ON THE DOWNSTREAM SIDE VARIES FROM 1'-4" AT END BENT NO. 1 TO 1'-2" AT END BENT NO. 2. THE HEADWALL ON THE UPSTREAM SIDE VARIES FROM 10" AT END BENT NO. 1 TO 8" AT END BENT NO. 2.



SECTION A-A

SECTION B-B

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".

B. 4 - 1" Ø X 2 1/4" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR PRECAST CONCRETE CROWNSPAN OR EQUIVALENT.

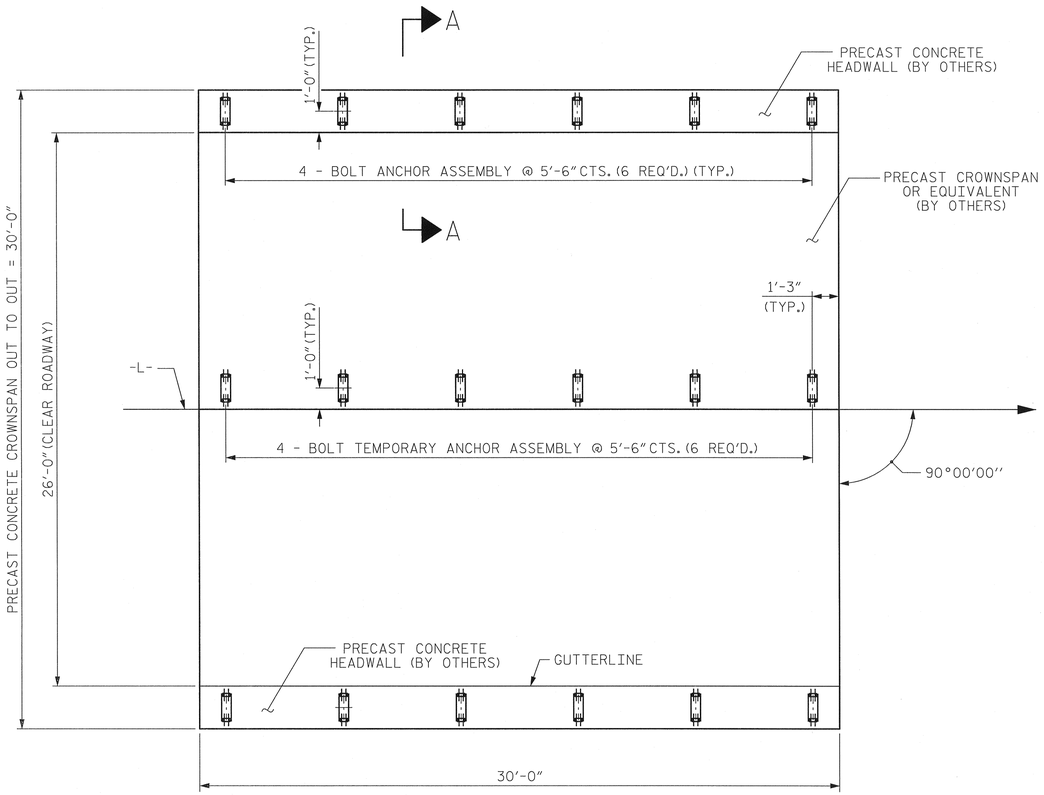
FERRULES TO BE PLUGGED DURING POURING OF HEADWALLS AS RECOMMENDED BY THE MANUFACTURER.

AT THE PRECASTER'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

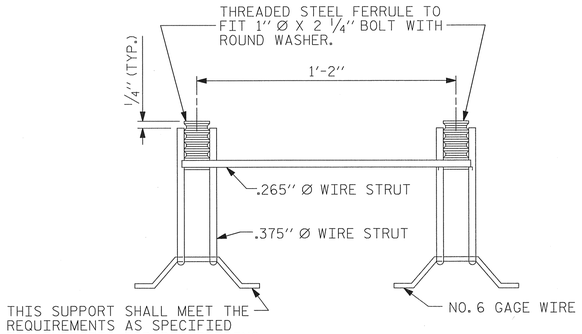
SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

THE CONTRACTOR AND/OR PRECASTER MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

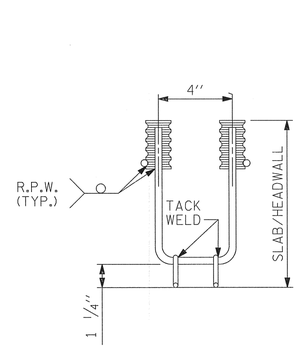


PLAN

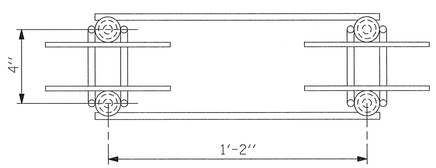
SHOWING : GUARDRAIL ANCHOR ASSEMBLY SPACING.



SIDE VIEW



ELEVATION



PLAN

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

ASSEMBLED BY :	PFC	DATE :	02/13
CHECKED BY :	CMT	DATE :	02/13
DRAWN BY : FCJ	6/88	REV. 7/10/01	LES/RDR
CHECKED BY : ARB	6/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06R	KMM/GM

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 14301 ENGINEER STEVEN A. CAMPBELL

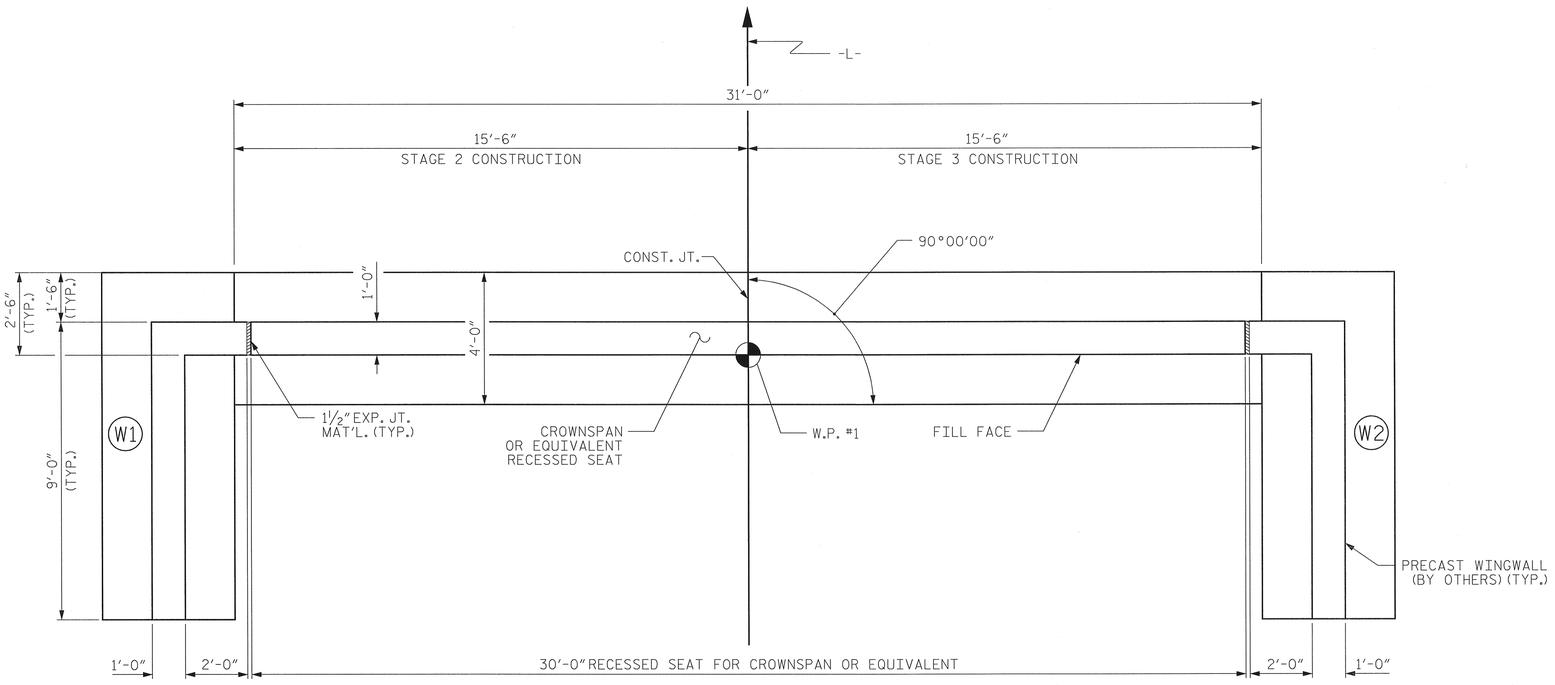
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ANCHORAGE DETAILS FOR GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS AND TRANSVERSE SECTION

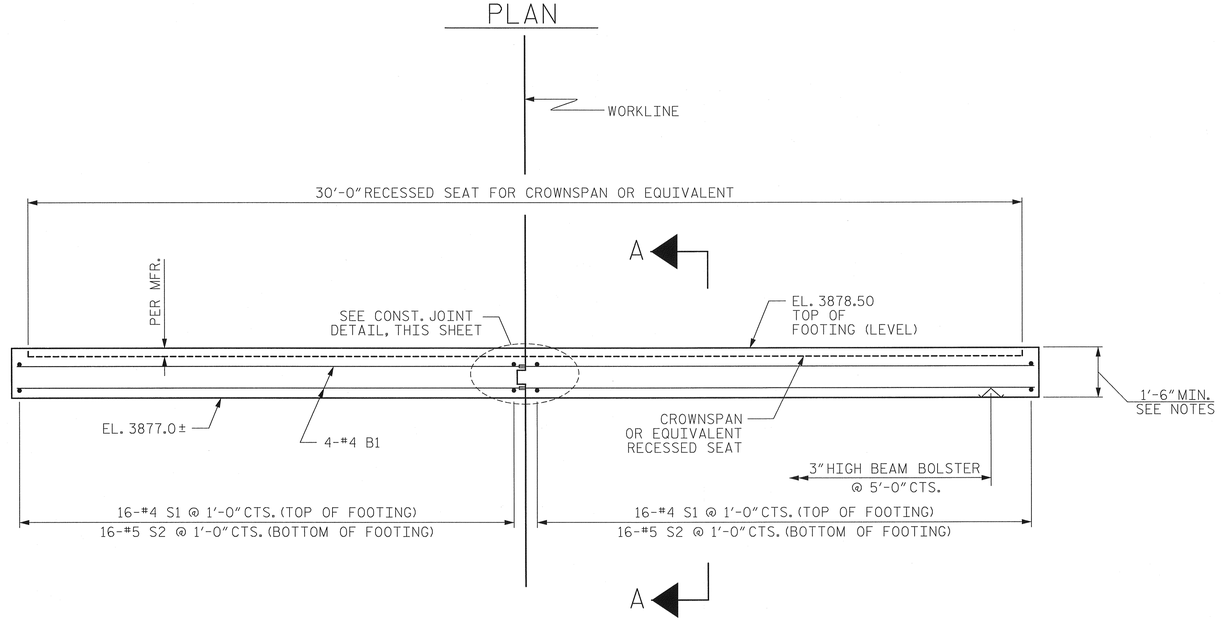
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			7

STD. NO. GRA1

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



PLAN



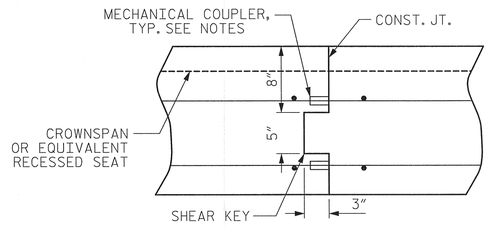
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 of 3.

NOTES

B2 BARS PLACED DURING CONSTRUCTION STAGE 2 SHALL HAVE MECHANICAL COUPLERS CAPABLE OF DEVELOPING 125% OF THE STRENGTH OF THE SPLICED BARS. THE CONTRACTOR SHALL SUBMIT SAMPLES OF HIS PROPOSED SPLICE SYSTEM TO THE ENGINEER FOR REVIEW AND APPROVAL. WELDED SPLICES MAY NOT BE SUBSTITUTED FOR MECHANICAL COUPLERS. THE COST OF MECHANICAL COUPLERS SHALL BE INCLUDED IN THE BID PRICE FOR REINFORCING STEEL. THE CONTRACTOR SHALL COORDINATE BAR LENGTH REQUIREMENTS FOR THE SPLICE SYSTEM USED WITH REINFORCING STEEL.

THE FOOTING SHALL BEAR ON BEDROCK HAVING AN ALLOWABLE BEARING PRESSURE OF 6 TSF OR GREATER. KEY FOOTING INTO ROCK A MINIMUM OF 1'-0". ADDITION OF UNREINFORCED SUBFOOTING CONCRETE MAY BE REQUIRED TO ACHIEVE THE FOOTING ELEVATIONS SHOWN. IF REQUIRED, SUBFOOTING CONRETE SHALL BE CLASS A AND THE COST SHALL BE INCLUDED IN THE BID ITEM FOR CLASS A CONCRETE. THE FOOTING ELEVATIONS SHOWN ARE BASED ON THE APPROXIMATE ELEVATION OF BEDROCK PROVIDED BY THE GEOTECHNICAL ENGINEER. DUE TO INCONSISTANCIES IN THE BEDROCK, OVER EXCAVATION MAY BE NECESSARY TO ACHIEVE THE REQUIRED FOOTING THICKNESS.



CONSTRUCTION JOINT DETAIL

PROJECT NO. 17BP.14.R.56
MACON COUNTY
STATION: 11+25.89 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

FOOTING No. 1

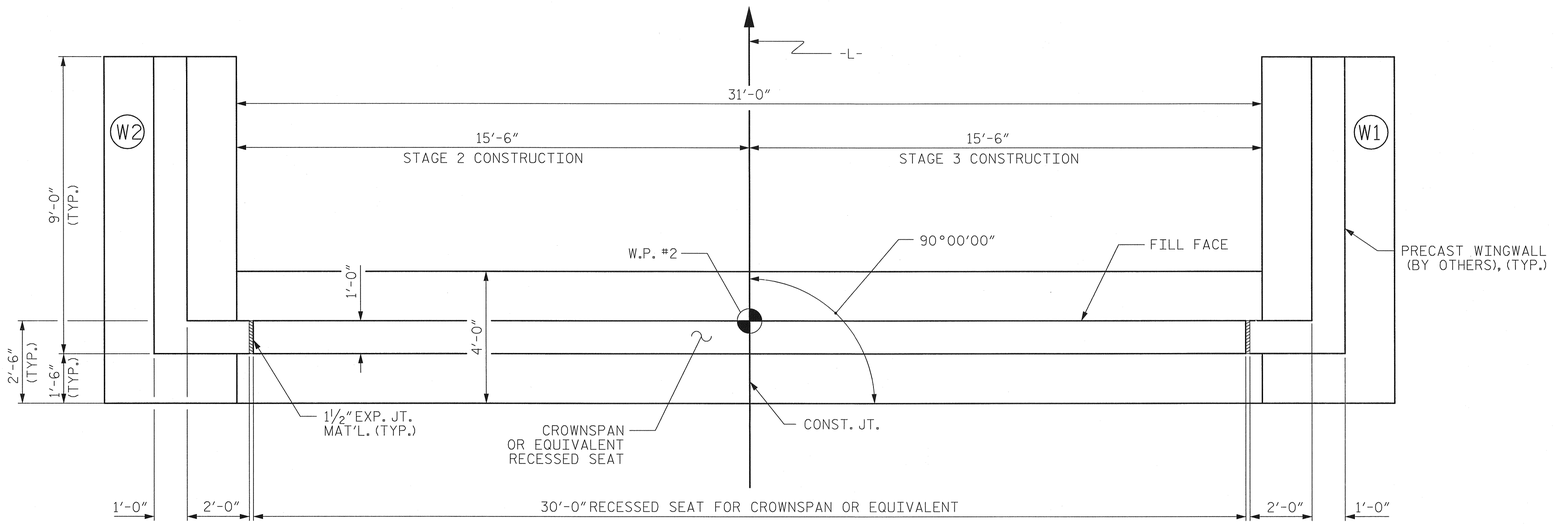
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			7

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

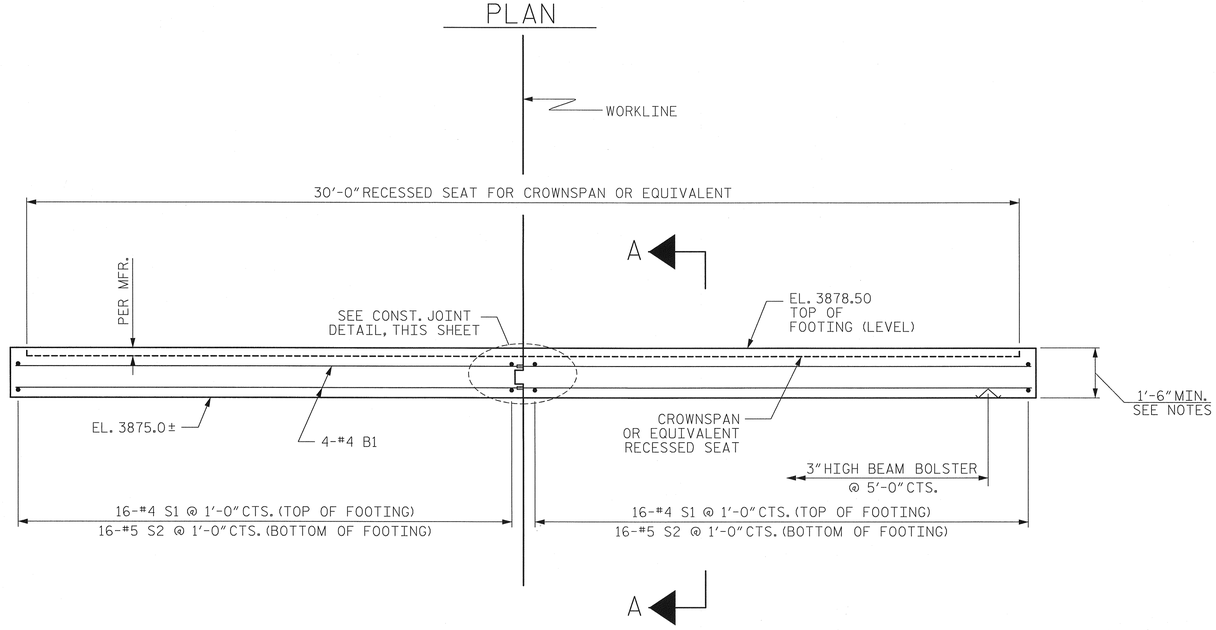
NORTH CAROLINA PROFESSIONAL SEAL 14308 ENGINEER STEVEN A. CAMPBELL

ASSEMBLED BY :	PFC	DATE :	02/13
CHECKED BY :	CMT	DATE :	02/13

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



PLAN



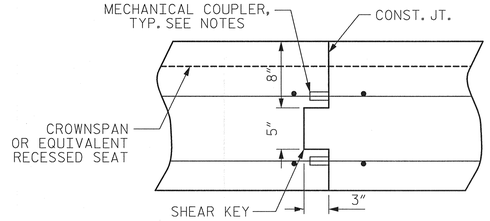
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.

NOTES

B2 BARS PLACED DURING CONSTRUCTION STAGE 2 SHALL HAVE MECHANICAL COUPLERS CAPABLE OF DEVELOPING 125% OF THE STRENGTH OF THE SPLICED BARS. THE CONTRACTOR SHALL SUBMIT SAMPLES OF HIS PROPOSED SPLICE SYSTEM TO THE ENGINEER FOR REVIEW AND APPROVAL. WELDED SPLICES MAY NOT BE SUBSTITUTED FOR MECHANICAL COUPLERS. THE COST OF MECHANICAL COUPLERS SHALL BE INCLUDED IN THE BID PRICE FOR REINFORCING STEEL. THE CONTRACTOR SHALL COORDINATE BAR LENGTH REQUIREMENTS FOR THE SPLICE SYSTEM USED WITH REINFORCING STEEL.

THE FOOTING SHALL BEAR ON BEDROCK HAVING AN ALLOWABLE BEARING PRESSURE OF 6 TSF OR GREATER. KEY FOOTING INTO ROCK A MINIMUM OF 1'-0". ADDITION OF UNREINFORCED SUBFOOTING CONCRETE MAY BE REQUIRED TO ACHIEVE THE FOOTING ELEVATIONS SHOWN. IF REQUIRED, SUBFOOTING CONRETE SHALL BE CLASS A AND THE COST SHALL BE INCLUDED IN THE BID ITEM FOR CLASS A CONCRETE. THE FOOTING ELEVATIONS SHOWN ARE BASED ON THE APPROXIMATE ELEVATION OF BEDROCK PROVIDED BY THE GEOTECHNICAL ENGINEER. DUE TO INCONSISTANCIES IN THE BEDROCK, OVER EXCAVATION MAY BE NECESSARY TO ACHIEVE THE REQUIRED FOOTING THICKNESS.



CONSTRUCTION JOINT DETAIL

PROJECT NO. 17BP.14.R.56
MACON COUNTY
STATION: 11+25.89 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

FOOTING No. 2

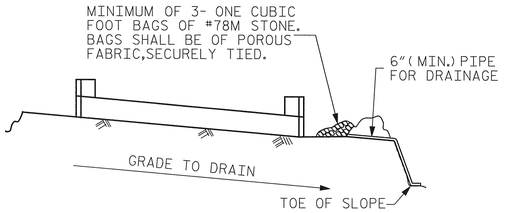
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			7

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 14399 ENGINEER STEVEN A. CAMPBELL

ASSEMBLED BY :	PFC	DATE :	02/13
CHECKED BY :	CMT	DATE :	02/13

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

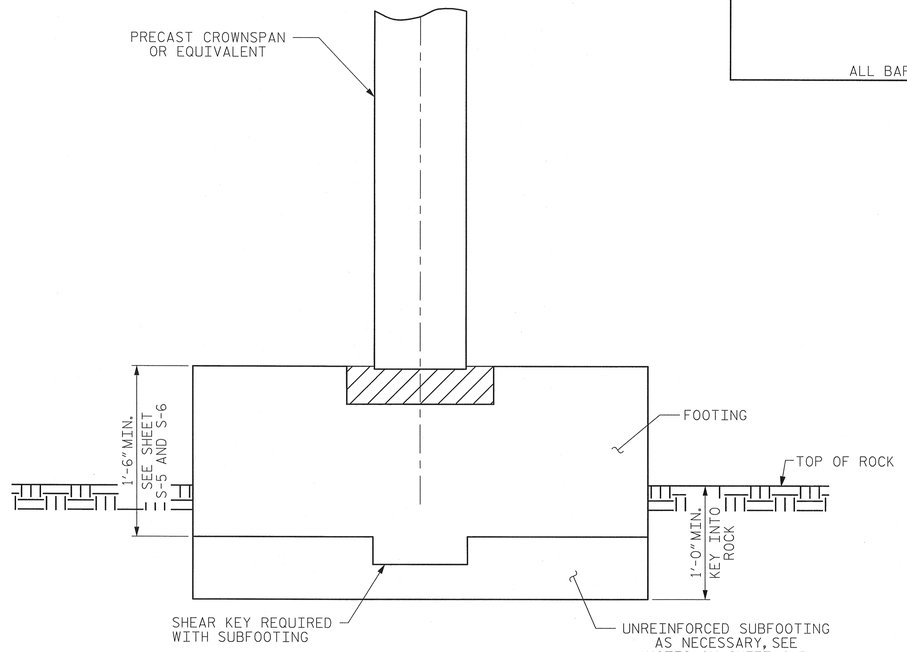


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

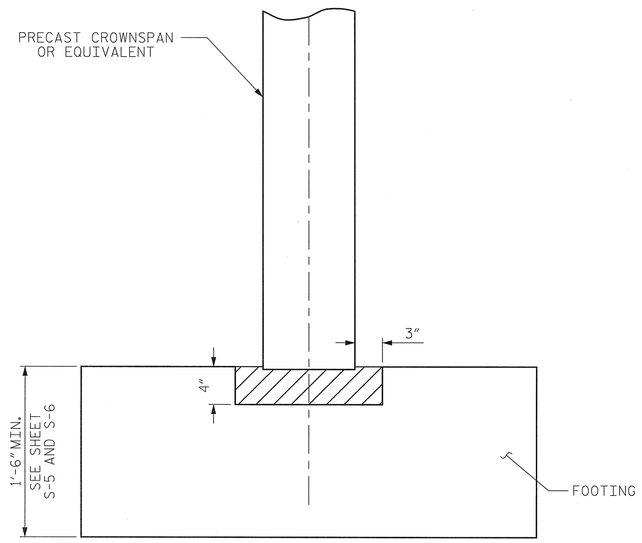
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

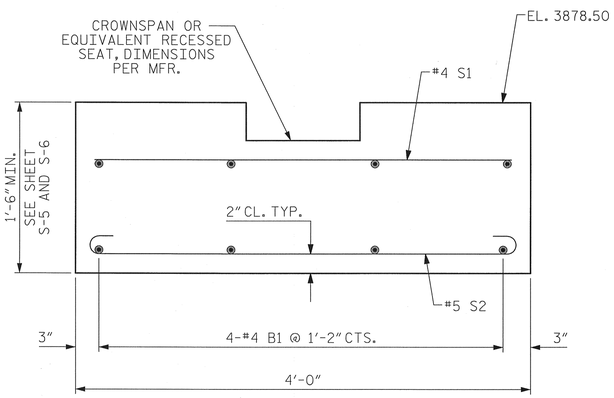
TEMPORARY DRAINAGE AT END BENT



KEYED FOOTING DETAIL

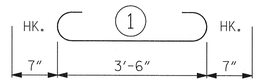


KEYWAY DETAIL



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4	STR	15'-3"	163
S1	32	#4	STR	3'-6"	75
S2	32	#5	1	4'-8"	156

REINFORCING STEEL (FOR ONE END BENT) 394 LBS.

CLASS A CONCRETE BREAKDOWN FOR END BENT NO. 1

POUR #1 SUBFOOTING 0.0 C.Y.

POUR #2 FOOTING 6.6 C.Y.

TOTAL CLASS A CONCRETE FOR END BENT NO. 1 6.6 C.Y.

CLASS A CONCRETE BREAKDOWN FOR END BENT NO. 2

POUR #1 SUBFOOTING 9.2 C.Y.

POUR #2 FOOTING 6.6 C.Y.

TOTAL CLASS A CONCRETE FOR END BENT NO. 1 15.8 C.Y.

PROJECT NO. 17BP.14.R.56

MACON COUNTY

STATION: 11+25.89 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

FOOTING No. 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			7

ASSEMBLED BY : PFC DATE : 02/13
CHECKED BY : CMT DATE : 02/13

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 14309 ENGINEER STEVEN A. CAMPBELL

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

ENGLISH

JANUARY, 1990

STD. NO. SN